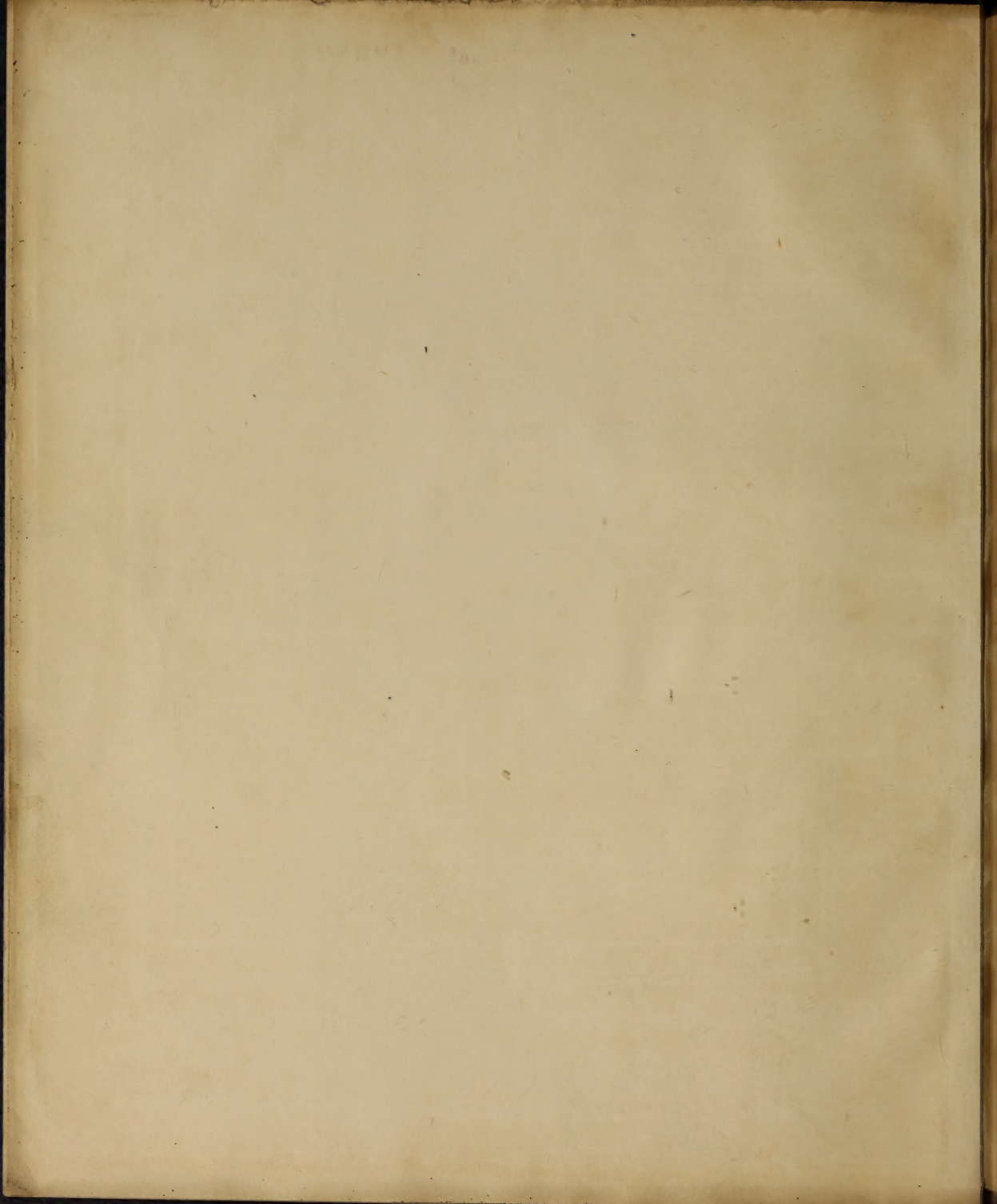


★★
No. Ms. F. 3.3





126

BOSTON

5929034

38

100

192.7

331.7

Dyalling

To make an Horizontal Dial
for Lat^d 42° 45' N.

In Horizontal Dyals the Propor^{ns} are these
 As Rad^l is to In. of Lat^d So is Tan. of an Equil. hour.
 To Tan. of Hourline dist. from Mer. or Substile.

To Project a Horizontal Dial.

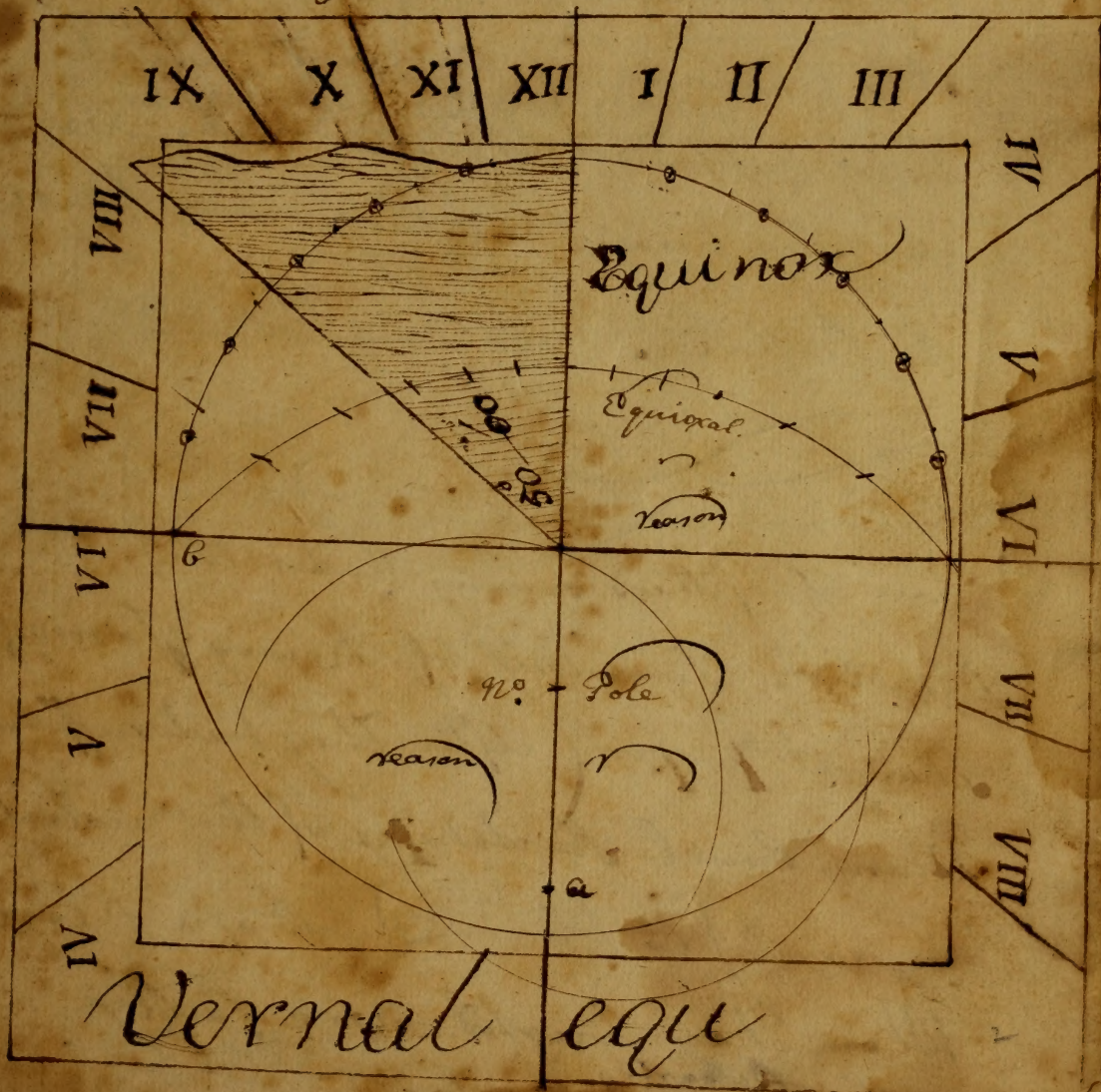
1. Describe a Circle with a ~~Chord~~ of 60 Degrees.
2. Cross of Circle at R^t angles, being of Meridian ~~of~~ of Place & of Hour line of 6. of Circle is of Horizon.
3. Find of Pole upon of Meridian, by setting off of Comp. Lat. from of Center on of line of Semi Tang. or from of line of Chords, set off of Comp. Lat. from one end of of 6 of Clock line, & laying a Scale from it to of other end of of 6 of Clock line cut of Meridian in of Pole of of world.
4. Set of of Equator upon of Meridian by taking of Lat. of of place from of line of Semi Tang. & setting it from of Center downwards, or of Contrary way ^{from of Pole}, or by of line of Chords upon of Primitive as before, or else take of Com. Lat. from of line of Sec. & setting foot in ^{due} of Diameter (Extended if need be) in (a) is of Center of of Equinoxial, & describe of Equinoxial.
5. Divide of Horizon or Primitive into 24 equal parts, ~~and~~ into.
6. Lay a Scale from of Center to those equal part & cut of Equinox in unequal parts.
7. Lay a Scale from of Pole to those unequal part of of Equator & Cut of Horizon or Primitive in unequal parts, which are of Angles of of Hour Lines.
8. And lastly draw lines from of Center to those unequal parts of of Horizon, and they will be of Hour Lines.

In like manner for of Halves & Quarters, if of Dial be large, and required.

Note, of height of of stile is Equal to of Lat. of of Place. And when of Dial is finished, it must be faced about, of north part to of South; because of Shadow is Contrary to of Sun, & so it must be placed.

Dyalling

To make Horizontal Dial
Lat. $50^{\circ} 60'$ N. Lat.



Bad books are the fountains of ^{Vice} ~~of~~

Of Dangers which befall us in General,
and likewise of the Events, which
have happened to ^{the} Americaⁿ, since
it the time that they have been
a People.

Our Forefathers serving Under the
Despotick Tyranny of King James,
Thought proper (After they had suffered
Many cruel Hardships of this noted
Tyrant) to be in Quest of a Place
Where they might more fully
enjoy ^{Liberty} and therefore,

Dialling

A horizontal Dial Set
 $25^{\circ} 00'$ W° — performed Geom.
 & Trigonometrical



As Rad⁹⁰⁻⁰⁰
 is to In. Lat²⁵⁻⁰⁰
 so is Tan^{Equ^r hour} 15-00
 to Tang. of an hours distance from Sub^{stile} 5-46

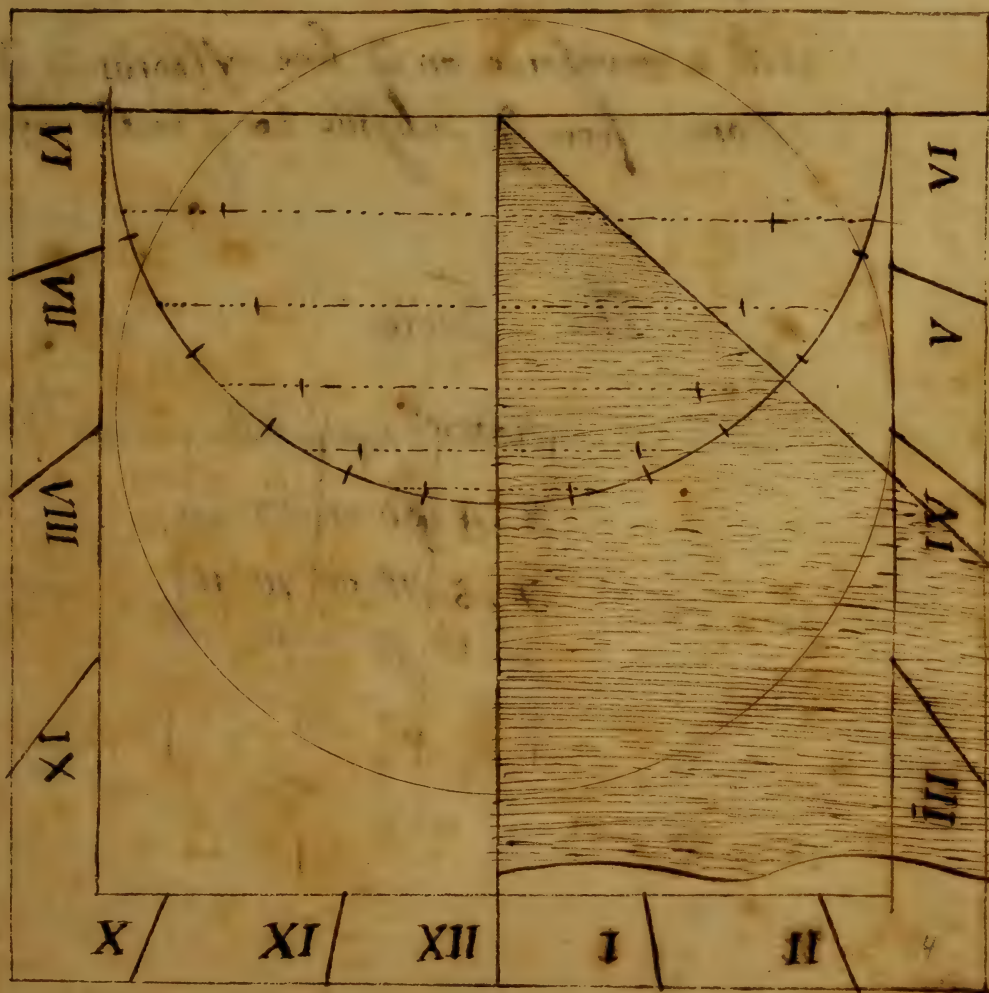
The Proportions are these

Sn. 90-00 ; Com. Lat. 47-35;; T 15-00; T 11-15
~~Sn 90-00~~ ; Co. Lat. 47-35;; T 30-00; T 23-05
 Sn 90-00; Co. Lat. 47-35;; T 45-00; T 36-22
 Sn 90-00; Co. Lat. 47-35;; T 60-00; T 52-00
 Sn 90-00; Co. Lat. 47-35;; T 75-00; T 70-10

The Table

Hours	Eq.	Dist. Substyle
12.		
1. 11	15-00	11-15
2. 10	30-00	23-05
3. 9	45-00	36-22
4. 8	60-00	52-00
5. 7	75-00	70-10
6. 6	9-00	90-00

Dyalling
 To make an Exact Direct
 S^d Dial for Lat^d 42° 25' 10"
 Geometrical & Trigonometrical



The Proportions are these

Sn. 90-00; Co. Latth; T 60-60; T 32-00

Sn. 90-00; Co. Latth; T 75-00; T 70-10

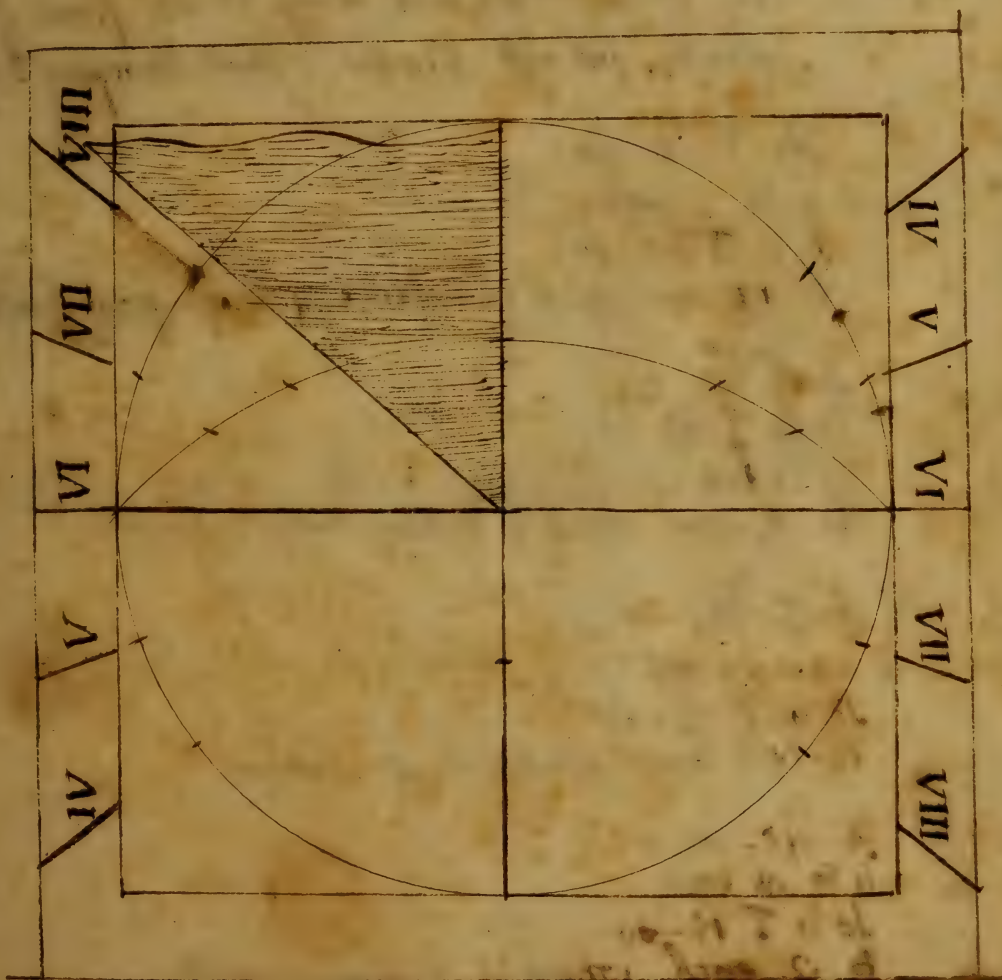
Which measured on y^e line of Chords is y^e
distance from y^e Subside to y^e lower line

The Table

Howev ^r	Eg ^r	Dist.
8.4	60-00	52-00
7.5	75-00	70-10
6.6	90-00	90-00

Dialling

To make a Rect Direct Dial
Lat. $42^{\circ} 25' N$



The Proportions for this Dial are these
The 5th & 7th Hours being 75-00 from y^e
Substile, and also 3 inches Distant therefore I say

As T 75-00

is to 3 inches

So is T 60-00

to $1\frac{4}{10}$ inch. which is distance 4 hower from Substile

As T 60-00

is to T 45-00

So is 1.4

to $\frac{8}{10}$ inch which is distance of y^e 3 hower

As T 45-00

is to 18 inch

So is T 30-00

to 152 inch. which is y^e 2 hower

As 45-00

is to 18 inch

So is T 15-00

to 12 inch which is y^e first hower

Note the height of y^e stile must reach to 3d. hower

Dialling

How to make an Equinoctial Dial
or a dial on which neither pole has any
Elevation on its plane,

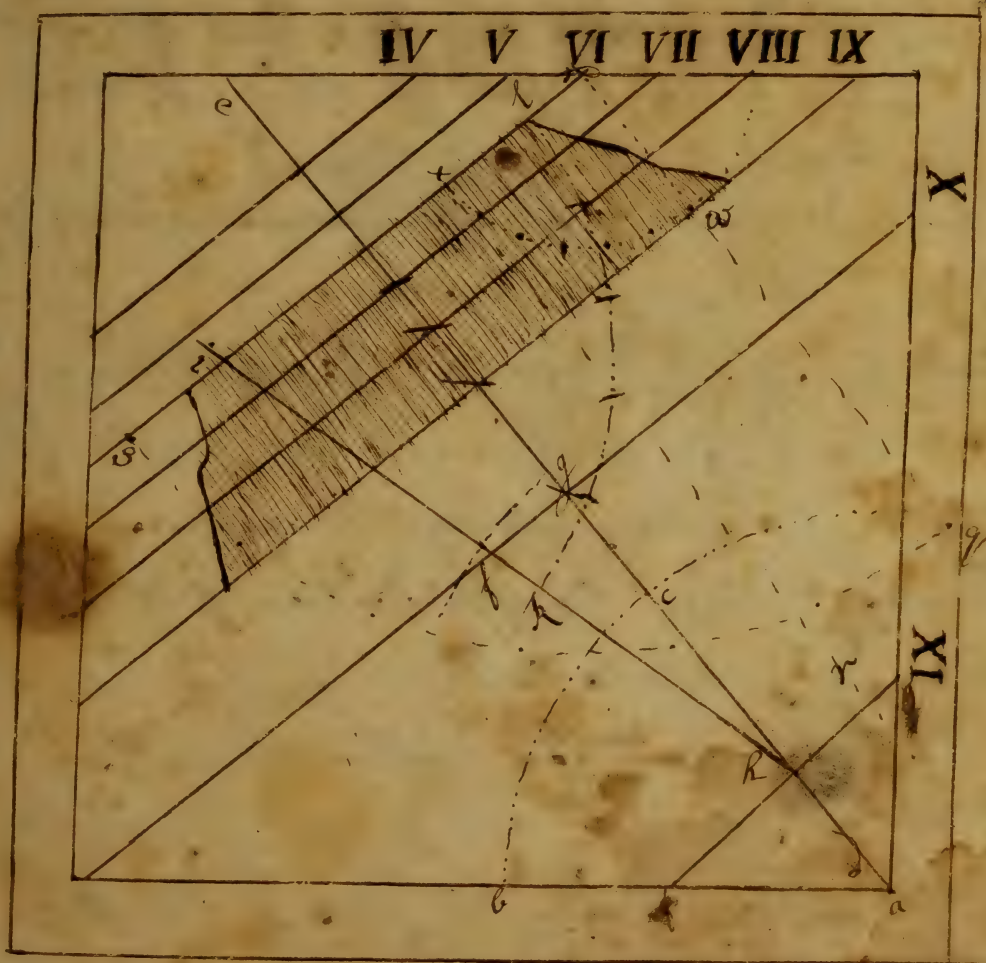


Having made a Square I assume a Point as y.
Point a, then Setting of y Com^t Lat^t. from b to c I draw
the line de which represents y Equinoxial, then I assume
y 11 a Clock line at right angles to y Equin^l. ~~as y Line~~
~~Then I~~ Assume y 6 Clock Line, and Setting of 15^d
downward on y arch f.g. and from h, I draw y line h i:
then Setting y ^{one} foot of y Compases in i, I ~~describ~~ ^{be} the arch
h l which being divided into 5 equal parts, the number
of hours from 6 to 11 and laying my Scale from those
divisions to y Center i, I mark where it cuts upon
the Equin^l. And through that Point parallel to y 6
Clock line I draw the ~~other~~ ^{hour} lines.

Another way is to make y Quadrant g w x off
same Radius with y Height of y stile, & dividing it into 6
~~Hours~~ Equal parts cut y Tangent line x v. it will be y
Hour Lines. Or more Exact, Describe a Circle
Quadrant, as s. g. y. & divide it as before. But still cut
upon y same Tangent line that is raised from y ~~same~~
Center at y ^{same} Distance with y Height of y stile.
This will do without setting off y 15 degrees downward.

Dyalling

To make an *Equal Direct*
Ecl. Dial for Lat^e: $39^{\circ} 41'$ *Equ.*



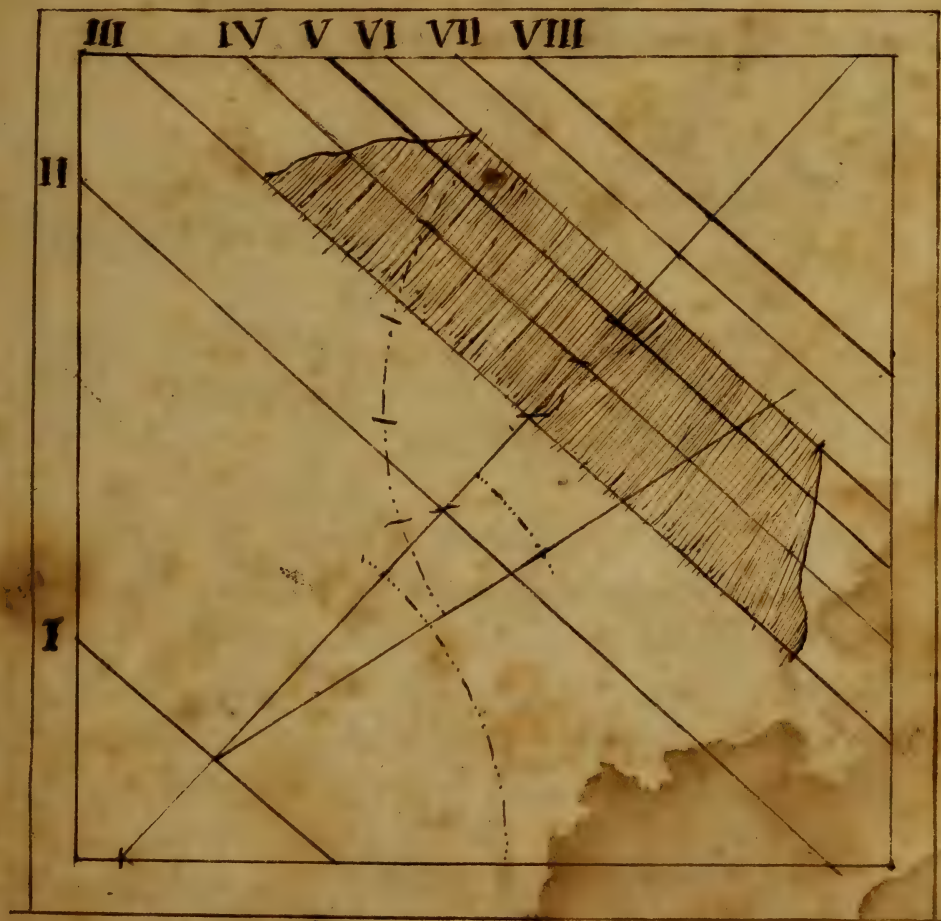
There is no Difference between this Dial
and the former, only this, that if Equil.
line is Set off from the other part of the
Square. — — — — —

There is nothing more commendable in Life,
than to spend ^{one's} time well; yet Mankind in
general are so far from consenting to this
Maxim, that they absolutely manifest by their
Behaviour their disapprobation of it; by squan-
-dering away that time in Trifles, which is
assign'd to them for nobler Purposes.

It is the Nature of Man to do those things
in the doing of which he feels great Pleasure,
but upon Reflection is filled with Remorse & Regret.

Dyalling

To make an Erect Direct W^t
Dial Lat^d 42^o 26' N^o



The Proportions are these

As C. T Com Dec.ⁿ 60-60 9761439
 Is to R^d 90-00 10,
 So is C In Com Latⁿ 47-35 9828993
 To C T Inclⁿ meridⁿ 40-38 10,066554

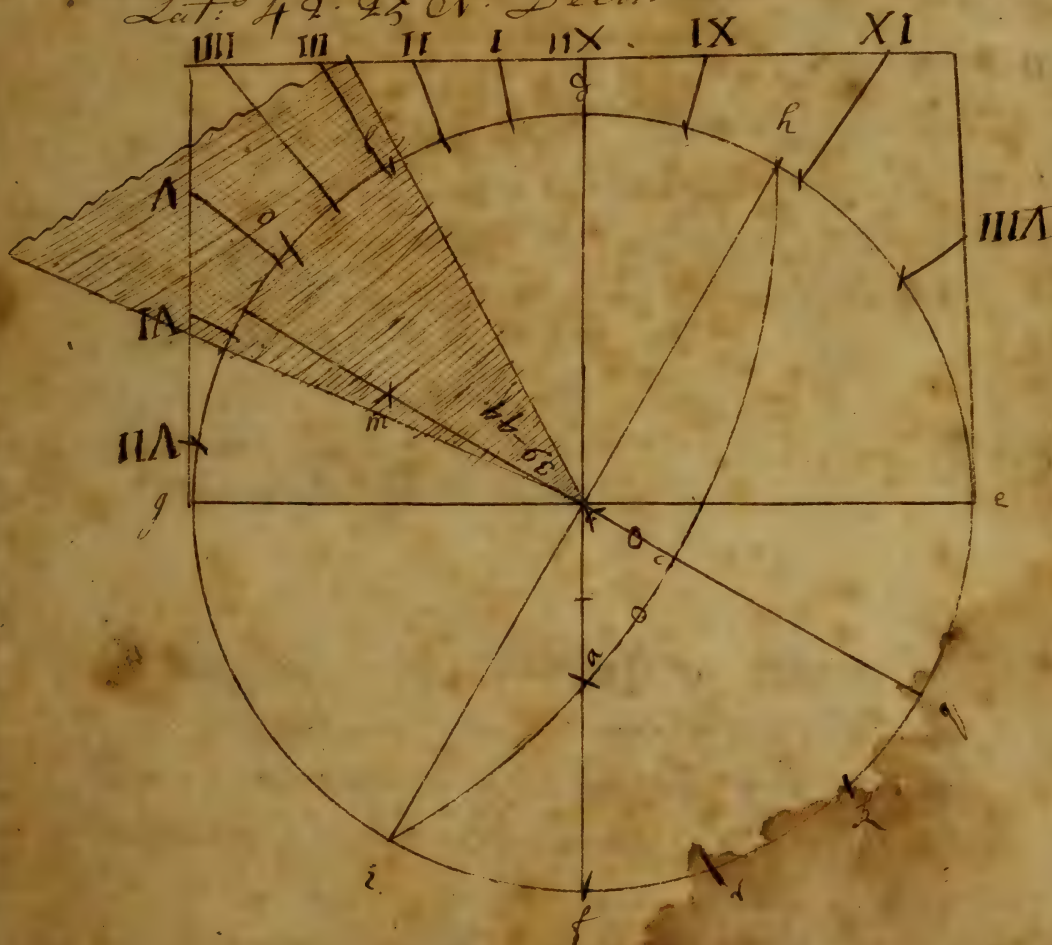
As C T Com Latⁿ 47-35 9960784
 Is to R^d 90-00.10,
 So is C In Com Dec.ⁿ 60-00 9,698970
 To T Subtilers distⁿ 28-41 9,738186

As R^d 90-00 10,
 Is In Com Latⁿ 47-35 9868208
 So is In Com Dec.ⁿ 60-00 9,937530
 To Poles height Plain^{ac} 39-44 9,805738

After I have described y^e Circle & crossed it at right angles It represents y^e meridⁿ of y^e Place then I set of the Declⁿ of y^e wall from d to h also from f to i & draw y^e line hi then seting of y^e Latⁿ of y^e place from f to k & laying my Scale from k to g I mark y^e point a which is y^e Pole, & seting of y^e Declinatⁿ from d to l & laying my Scale from that to i I mark y^e Point m which is y^e Pole of y^e oblique circle iak 30 deg^s distant from it. The ^{meas^{re}} of y^e Angle at a ^{is} done by laying y^e Scale from y^e Angler point ^{of} pole of y^e obliq^{ua} circle & cutting at o from o to g is y^e measure of y^e angle

Dyalling

To make an Erect Declining Dial for
 Lat: $42^{\circ} 25' N$. Declination $30^{\circ} 00' W$



The lower Table followeth in y next page

Howers	East Dist.	Dist from	Substile
5.7	64-22	53-60	
6.6	49-22	36-43	
7.5	34-22	23-37	
8.4	19-22	12-44	
9.3	4-22	2-47	
10.2	10-38	6-47	
11.1	25-38	17-03	
12	40-38	28-10	
1.11	55-38	43-00	
2.10	70-38	61-26	
3.9	85-38	83-10	
4.8			
5.7			
6.6			
7.5			

The Proportions to find the
distance of y Howers lines
from y Substile is

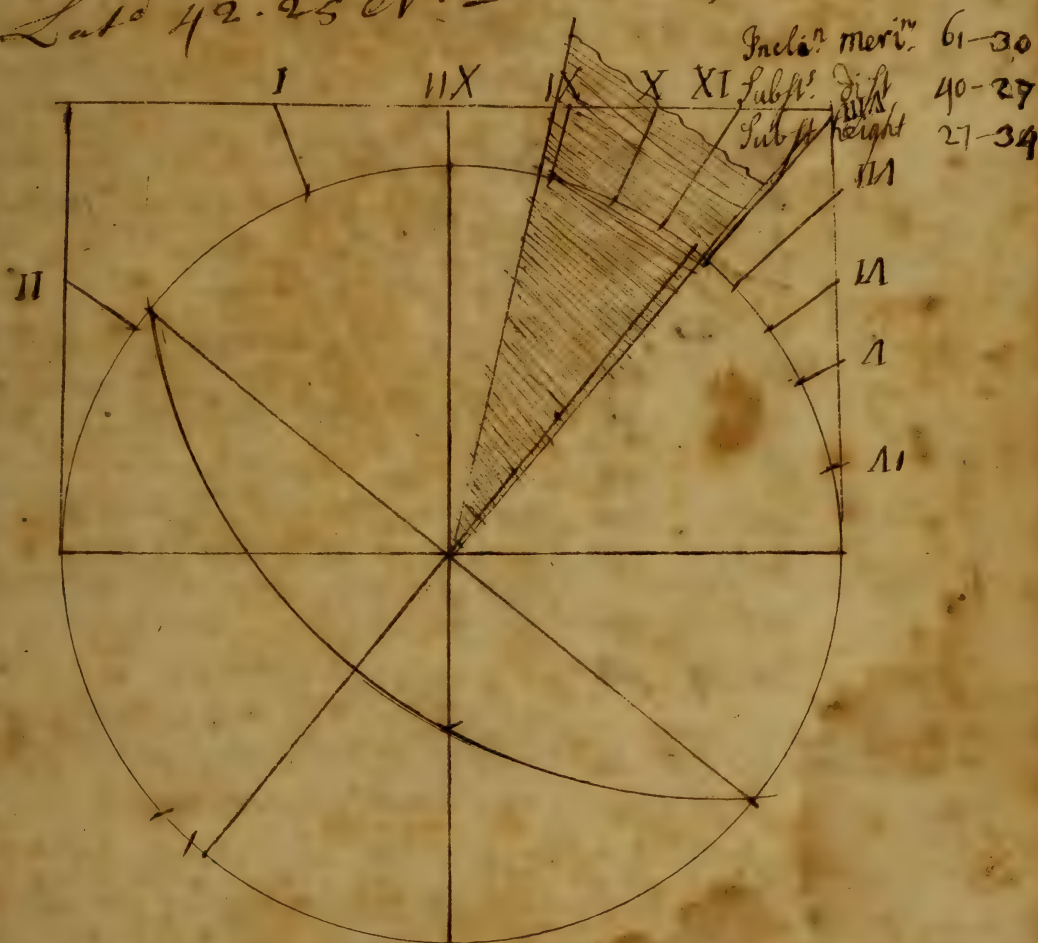
As In 90-60
Is to height of stile 39-44
So is Tan. of an howers dist. upon Equi.
to T of an howers dist. Substile

Note, If y declr be Westerly
the stile must stand to y East-
ward: if Easterly the stile must
stand to the Westward.

The measure of those Sides of a Spherical Trian-
gle that pass thorow y center are measured on y line
of Semic Tang^t that side of y triangle which is made
by the oblique circle is reduced on y primitive by
laving y Scale over y Pole of y oblique circle & y
angle & cutting y primitive. the dist. from q to r in y former
Projection is y measure from a to c in y Spherical triangle
abc. The measure of an angle is measured likewise as before
taught.

Dialling

To make an Erect declining Dial for
 Lat^o 42.23 N. Declin^o 51.10 S E



The Flower Table followeth in y^e next Page

Hour. Deg. Equinox. Dist. Subtile

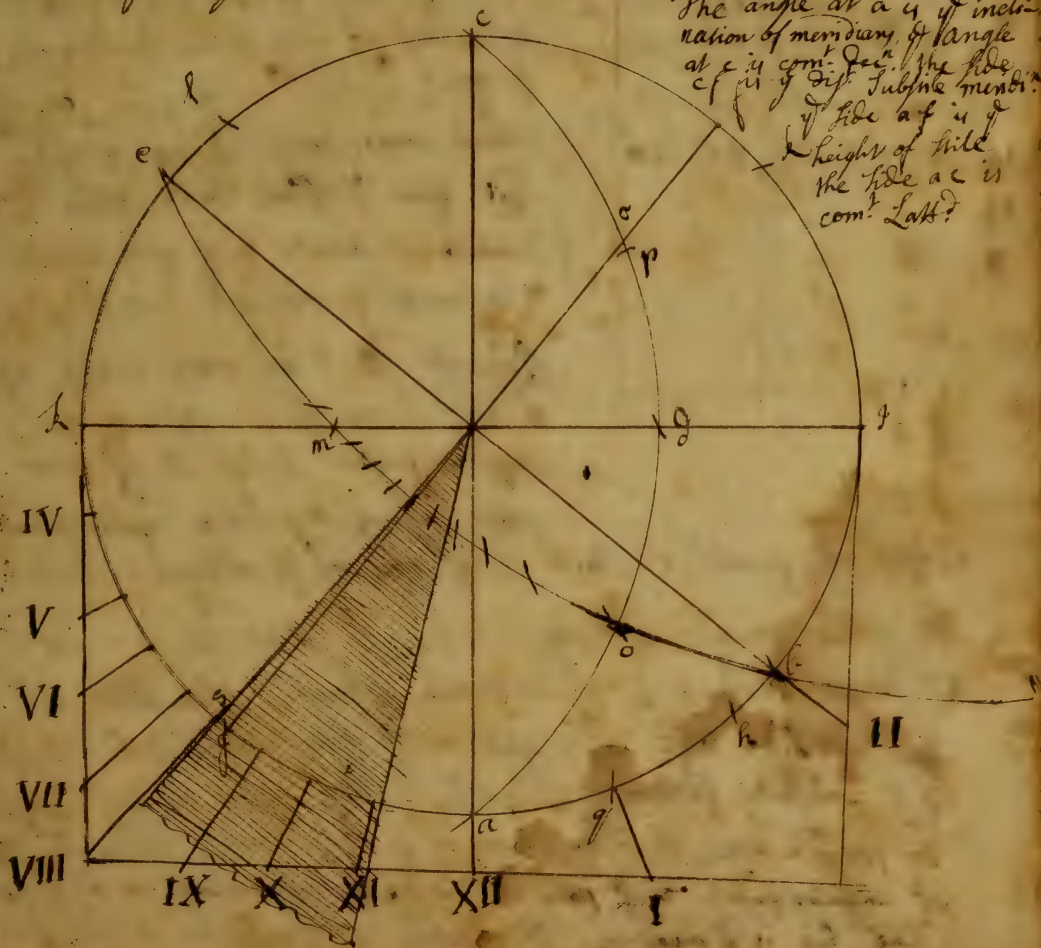
Directions

5.7		
6.6		
5.7		
4.8		
3.9		
2.10	91- 29	86- 47
1.11	76- 30	62- 39
12	61- 30	40- 26
11.1	46- 30	25- 09
10.2	31- 30	15- 50
9.3	16- 30	7- 48
8.4	01- 30	0- 41
7.5	13- 30	6- 29
6.6	28- 30	14- 06
5.7	43- 30	23- 42
4.8	58- 30	37- 08

After y^e Circle is Described & Crosted at right angles y^e 12 clock line is y^e axis, y^e line perpendicular to it is y^e east & west line, then Setting of y^e Declⁿ Eastward from a to b, then laying my Scale from b to c & mark y^e point d through which I describe y^e oblique circle adc which is y^e meri^d of the place; also I draw y^e line bce which represents y^e wall & perpen. to it y^e line fg which is y^e meri^d of y^e plain. Then I find y^e Pole of y^e Oblique Circle by Setting of y^e Decⁿ from l to g or from h to l & laying my Scale from either of y^m to a point 90 deg distant, as from g to c or l to a I mark y^e point m which is y^e pole of y^e oblique Circle: then Setting of y^e Lat^d from a to h & from l to l & laying my Scale from m to l I find y^e point p which is y^e pole of world, & likewise laying my scale from m to h I mark y^e point o which is y^e intersection of y^e Equiⁿ with y^e meridian, then through y^e point m & y^e point o I describe y^e circle emob which is y^e Equinox: then laying my scale upon y^e Pole p & y^e intersection at o I mark y^e point q from whence I begin to divide y^e primitive into equal parts, & laying my ^{scale} upon them & y^e center I divide y^e Equinox into unequal parts which done I lay my Scale upon y^e pole p & y^e divisions on y^e Equiⁿ & cut y^e hour-lines upon y^e primitive, then laying my scale upon y^m & y^e center I draw out y^e hour-lines upon y^e square. The Subtile is found by laying my scale from y^e pole of y^e world over y^e center which cuts at 5.

Dialling

How Geometrically to project
the foregoing Disk



Houses	Dist. Equi	Dist. Substile
8. 4	47-05	17-30
7. 5	32-05	10-30
6. 6	17-05	5-08
5. 7	2-05	0-36
	Substile	
4. 8	12-55	3-50
3. 9	27-55	8-51
2. 10	42-55	15-13
1. 11	57-55	25-00
12	72-55	44-50
11. 1	87-55	82-50
10. 2		
9. 3		
8. 4		
7. 5		
6. 6		

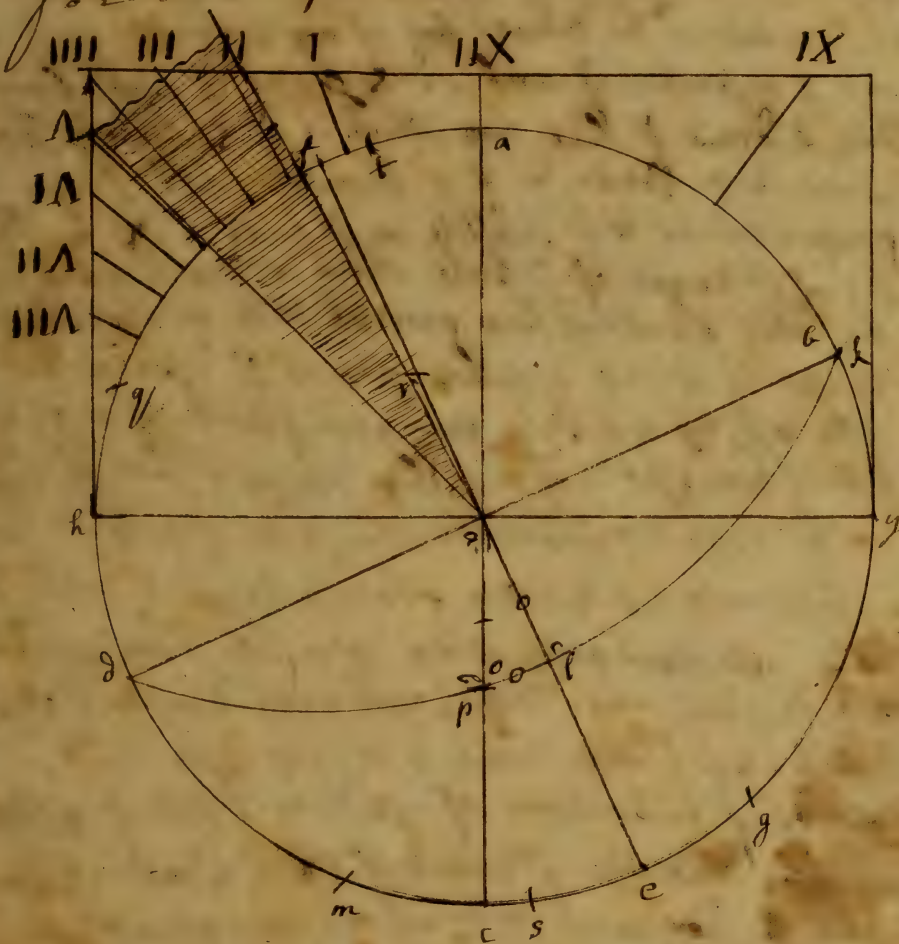
Inclination of Meridians $72-55$
 Substiles distance — $44-53$
 Stiles height — — $17-07$

The Decⁿ is set of from a to b & from c to d, perpendicular to which is drawn g line ef. the Lat. is set of from c to g and laying my scale from g to h I mark y point p which is y pole, or else take which comes to y same I take y Com Lat from y Semi Tan^r & set it of from y Zenith or center to y pole, through which I describe y oblique circle, to find y Pole of it, I lay my scale upon h & l & cut m then taking y dist^{ce} of 90 in my compasses I set it of from m to q and laying my scale upon that h I mark y point r which is y pole of y oblique circle.

In y Spherical Triangle a b c, y angle at a is Com. Decⁿ y angle at b is y inclination of meriⁿ. the side a b is Com. Lat. y side b c is height of y stile, the side a c is y dist^{ce} of y Substile from y meridian. the measure of y angle at a is from c to e. the measure of y \angle b is done by laying y scale over y angular point & y pole r cutting t from thence to h y pole of y line h v is y measure. y measure of y side b c is from v to p cutting s from s to e is measure. a b, a c is measured on y Semi Tangent.

Dialling

To make an Erect Declining Dial
for lat^d $42^{\circ} 25'$ W. Declinⁿ $65^{\circ} 10' 28''$



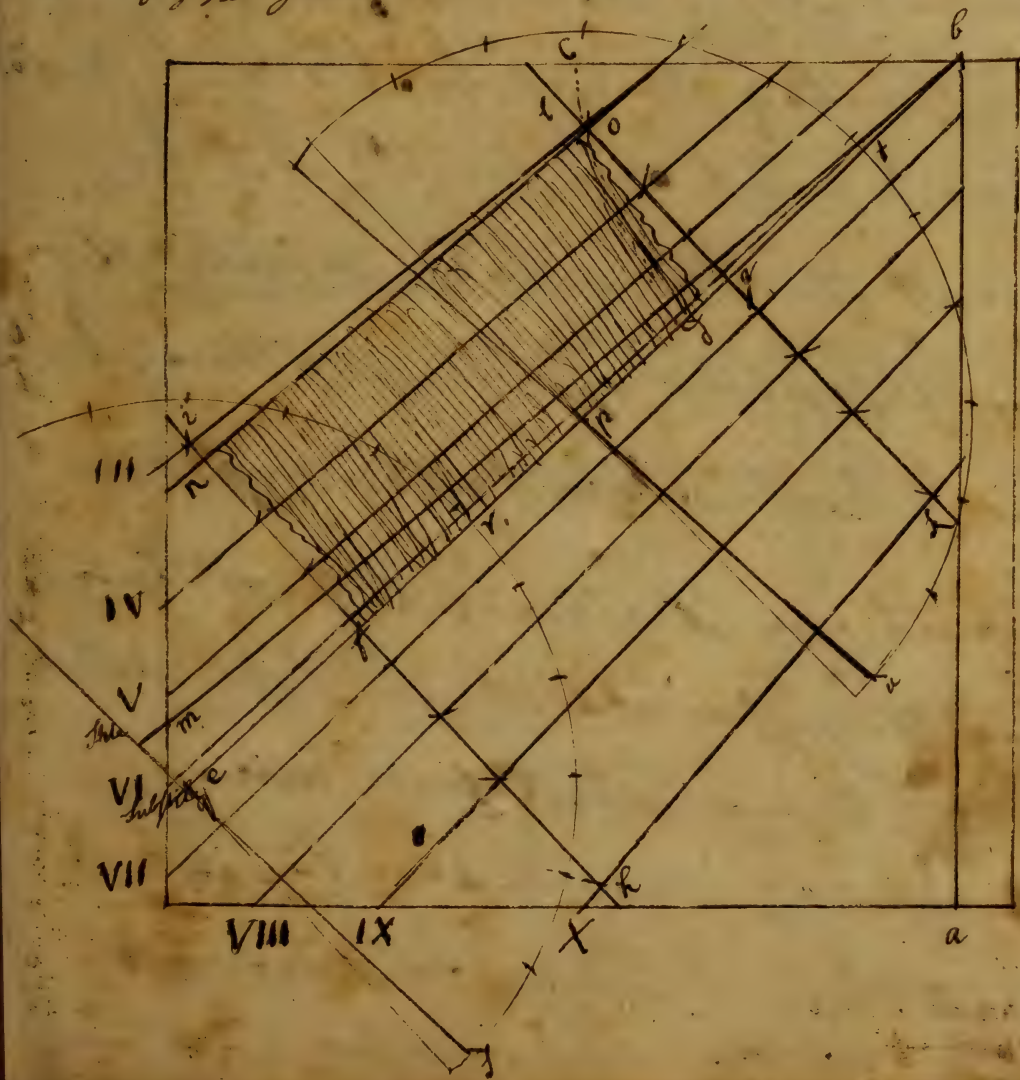
Inclination of meridians $86-38$ or $74. m.$
Subsiders distance meridian $47-28$
Poles height from y plain $03-41$

After I have formed y Square & drawn y line a b, I take a Chord of 60, & one foot of my compasses in y angle at b I describe y arch c d & set of y Latⁿ from c to d. Then I draw y line b c which is y Substile. Then I assume two Points as f. g through which I draw lines perpendicular to y Substile as y lines h i k l. Then I set of y height of y stile which is y line b m, to heighten the stile I draw a line parrelet to it at what distance I please as y line n o, then taking y distance from y Substile to y top of y stile from g to o, I set it of at p, & y distⁿ from f to n, I set it of at q. Then taking a Chord of 60 I describe those two semicircles; then I set of y Declⁿ from y Substile at r to s & t to u, where I begin to divide y semicircle into equal parts 15° deg^s in a part, then laying my Scale from y center over those equal parts I cut on y straight lines h n & k l throw which I draw y hower lines. Now by y Inclinations of meridians I find y Substile must be betwene y howers of 6th & nearer 6th than 7 which is directions to mark my hower lines.

If it had been a west decliner their would have been no other difference but only drawing y Substile frome y other upper part of y Square.

Stalling

To make an Erect declining Dial
for Lat^o 42. 25 N. Declin^o 45. 00 E^t from
the south



The Tyrant granted them a certain
Place In America; ~~where~~ ^{And} they thought
fit to set ^{out} for this Solitary Wilderness;
~~where~~ Crossing the wide Atlantic, at
length they Arrived at a Place which
Now is called Nantasket; and they
found the Place to be inhabited
By Altogether ^{by} ~~&~~ Savages; threat-
ning Destruction to them, if they
received any Detriment from them.
When they Arrived at a Place called
by the Savages Mattapan now
Dorchester. They began to ^{try} see
What this Solitary Wilderness
would Produce

Horizontal Dial. 42-25					Erect Direct S. ^d Dial. 42-25			
Hours from Noon	Hours from Noon	$\frac{1}{4}$ Hour	$\frac{1}{2}$ Hour	$\frac{3}{4}$ Hour	Hours from Noon	$\frac{1}{4}$ Hour	$\frac{1}{2}$ Hour	$\frac{3}{4}$ Hour
0.	D. m. 2-32	D. m. 5-04	D. m. 7-38	D. m. 2-46	D. m. 5-33	D. m. 8-21		
1.	10-15	12-54	15-36	18-24	11-11	14-04	17-00	20-00
2.	21-16	24-15	27-22	30-36	23-05	26-15	29-31	32-55
3.	34-00	37-34	41-19	45-16	36-32	40-05	43-53	47-51
4.	49-26	53-50	58-27	63-17	51-58	56-15	60-42	65-20
5.	68-20	73-34	78-57	84-27	70-03	74-55	79-53	84-55
6.	90-00				90-00			

Horizontal Dial for Latitude ^{D.} 42 ^{m.} 25.								
Hour.	Min.		Hour	Min.		Hour	Min.	
0.	10	D. min. 1-41	2	10	D. min. 23-15	4	10	D. m. 52-20
	20	3-22		20	25-16		20	55-20
	30	5-04		30	27-22		30	58-27
	40	6-47		40	29-30		40	61-39
	50	8-30		50	31-45		50	64-57
1	00	10-15	3	00	34-00	5	00	68-20
	10	12-00		10	36-21		10	71-48
	20	13-48		20	38-47		20	75-21
	30	15-36		30	41-19		30	78-57
	40	17-27		40	43-56		40	82-36
	50	19-20		50	46-38		50	86-18
2	00	21-16	4	00	49-26	6	00	90-00

In Chamberlaynes present State of
of England, page 24 &c.

Averdupois, hath 16 Ounces to 1 pound, but then 1 Ounce Averdupois is lighter than 1 Ounce Troy by 42 Grains in 180. [note 480 grains is an Ounce Troy & 15760 Grains is a Pound Troy] that is near a 12th part; so that the Averdupois Ounce containeth but 438 Grains, & is as 73 to 80, that is 73 ounces Troy is as much as 80 Ounces Averdupois; and 6 pounds Averdupois is equal to 73 pounds Troy: and 14 ounces Troy & a half & 10th part of a Troy Ounce, make 16 Ounces (or one Pound) Averdupois.

Page 18. In King Edw. 1st Third time, a Pound Sterling was a Pound Troy weight, whereas now a Pound Sterling is but 1/3 part of a Pound Troy, and little more than a 1/4th part of a Pound Averdupois weight. Page 20. That 12 ounces of pure silver without any alloy, is worth £3-4-6, and an ounce is worth £0-5-4-1, but with alloy is worth but £3, & 1/2 ounce 5/. So that now 1/3 proportion of Gold to Silver in England, is as 1 to 14 & about 1/3, that is to say, one Ounce of Gold is worth in Silver 14 ounces & about 1/3 or £3-14-2 of English Money.

Page 79. England contains 7725 Parishes, not allowing to each Parish one with another 30 Families, there will be 778000 Families, & to each Family 7 Persons, there will be found in all Nine millions four hundred forty six thousand Souls, & amongst them about one Million of fighting Men.

Page 97. The Year in England according to 1/2 Cycles of 1/2 Sun & Moon, according to 1/2 Almanack, begins on the first of January; but 1/2 English Church & State (beginning 1/2 year from 1/2 Day of Christ's Incarnation; viz. on 1/2 25th of March, which is also observed in Spain; yet 1/2 Portugues, & divers Countreys in Africa) begin 1/2 year on 1/2 29th of August the Venetians on 1/2 first of March, according to 1/2 Epact of Grecians on 1/2 longest Day, as 1/2 old Romans did on 1/2 shortest Day; viz. two last seem to have most reason as beginning just at 1/2 Periodical Day of 1/2 Sun return.

The Natural Day consisting of 24 Hours, is begun in England at midnight, & counted by 12 hours to Midday, & again by 12 hours

hours to next midnight; whereas in Italy, Bohemia, Poland & some other Countries, they account from Sun setting by 24 of y^e Clock to y^e next Sun setting; and at Nuremberg & Wittenberg in Germany, according to y^e Old Babylonian account they begin at y^e first hour after Sun rising to count one of the Clock, & so again at y^e first hour after Sun set.

Page 99. The English (as all y^e western Christian till about 400 years ago) used only Numeral words in all writings; but since y^e Figures 1, 2, 3, &c. which y^e Christians learnt first of y^e Maures or Arabs, & they of y^e Indians. [Wrote in King Charles y^e 2^d time.]

Page 295. Speaking of y^e plenty of y^e Kings Table before y^e troubles in Charles y^e 5th time, says, through y^e whole body of y^e Kingdom was spent in y^e Kings house yearly of gross meat 1500 Oxen, 7000 sheep, 1200 Veals, 300 Porkers, 400 Sturks or young Beefs, 6300 Lambs, 300 Filiches of Bacon, & 20 Boars, Also 1140 Doffen of Geese, 250 Doffen of Capons, 470 Doffen of Hens, 750 Doffen of Pullets, 5470 Doffen of Chicken. For Bread 36400 Bushels of Wheat; and for Drink 600 Tun of Wine, & 1700 Tun of Beer. Moreover of Butter 46640 poundes, together with Fish & Fowl, Venison, Fruit, Spice proportionable.

Page 293. There were daily in his Court 86 Tables well furnished each meal, whereof y^e Kings Table had 28 Dishes, the Queens 24, 4 other Tables 16 Dishes each, three other 10 Dishes each, 12 other 7 Dishes each, 17 other 5 Dishes each, 3 other 4 each, 32 other 3 Dishes each, & 13 other had each 2 Dishes; in all about 500 Dishes each meal, with Bread, Beer, Wine, & all other things necessary.

Page 412. of Temporal Lords or Peers of England, there are at present about 170, whereof there are 10 Dukes, 3 Marquises, 68 Earls, 8 Viscounts, & 78 Barons; whereas within 70 years last past there was not one Duke, but one Marquis, about 19 Earls, 3 or 4 Viscounts & 40 Lords. Note A Baron is y^e lowest Peer as a Duke is y^e highest, & a Baronne is y^e highest of y^e 3^d Estate or y^e Commons, or y^e lower nobility & a Gentleman y^e lowest. all noblemen are Gentlemen tho' all Gentlemen are not noblemen.

Page 440, of the lower Nobility in England there are
Reckoned at present, about 700 Barons, who are possessed
one with another of about £1200, a year in Lands. of
Knights about 1400, who one with another may have about
800 pounds Lands a year. of Esq^{rs} & Gent^l about 6000, each
one possess one with another about £400 a year in Lands.
Next to the lower degree of Nobility & the first degree of Commons
or Plebeians, are the Freeholders in England commonly
called Yeomen signifying in low Dutch, Somebody. The
Yeomantry of England having Lands of their own to a good Value,
& living upon Husbandry, are lookt upon as not apt to commit
or omit anything that may endanger their Estates or Credits,
nor apt to be Corrupted or Suborned &c. wherefore they are
Judged fit to bear some offices, as of Constables, Churchwardens,
to serve upon Juries, to be Train Soldiers, to Vote in Election
of Knights of the Shire for Parliament &c. In Cases & Causes
the Law of England hath conceived a better opinion of
Yeomantry that occupie Lands, than of Tradesmen, Arti-
ficers or Labourers. Husbandry hath in no age removed
a Gentleman ignoble, nor uncapable of places of Honour.
The next are Smytholders, next Tradesmen, & first foreign
merchants, then whole salemen, then Retailers, lastly me-
chanicks or handicraftsmen. These are all cable to bear
some sway or office in Cities & Towns Corporate. The lowest
member of the 1st of the Body Politique, are the Day Labourers
these by their large wages, live better than the Husbandmen
do in many other Countreys.

The second part. page 102 Those that Vote for Knights of
the Shire were to be Freeholders, Reside in the County & had yearly
Revenue 40/. which till the discovery of Gold & Silver in
America, was as much as 30 or 40 pounds now. This Act was
made by Hen. 6.

Page 120. The Lord House give their Suffrages or
Votes beginning at the highest or lowest Baron, & so of rest & Peri-
ation, every one answering apart [content] or [not content].
The House of Commons they vote by Yea's and No's altogether
& if it be Doubtfull whether the greater number, then the
Yeas are to go forth, & if No's are to sit still, (because these are
Content

Content with their present Condition, without any such Addition or alteration of Laws as I other desire) and some are appointed to number them; but at a Con^{ter} this is be off, whole House as is sometimes, the Yeas go on one side, & I not on the other, whereby they may be discerned.

Page 140. To I Lord, House belong 3 Dukes of Royal blood, the one be infra statum, 7 other Dukes, 3 Marquises, 56 Earls, 9 Viscounts, and 67 Barons, in all 154. Then there are 2 Arch-Bishops & 26 Bishops: so that I total is 180. But many being under age, some sick, abroad &c. I ordinary number is about 100.

To I House of Commons belong a little more than 500 [I think 513] persons, whereof commonly near 200 are absent upon business, sickness &c.

Page 285. In 1588, upon Expectation of I Spanish Armado, stiled invincible, there went forth from I Queen Commissions to muster in all parts of England all men that were of perfect force & limb, from I age of 16 to 60, except Noblemen, Clergymen, University Students, Lawyers, Officers, & such as had any Publick Charges, leaving only in every Parish so many Husbandmen as w^{re} sufficient to till I ground. In all those musters there were then numbered three millions: but of these fit for War, about six Hundred Thousand. In another muster of Queen Elizabeth there were found in all England fit for War of Common Soldiers, about four Hundred Thousand, & of those armed & trained one Hundred Eighty five Thousand besides Horse near forty Thousand: and that I Nobility & Gentry were then able to bring into I field of their Servants & followers Twenty Thousand men Horse & Foot, Choice men, & Excellent Horses; and all fit for War, & ready upon all occasions six Hundred Forty two Thousand, leaving sufficient to till I ground, and to furnish Trades, besides Nobility, Gentry &c.

Page 295. 2^d part. The Royal Sovereign being a Ship of the first Rate or Rank, built in Year 1637, is in length by I Keel 127 feet, in Depth 49 feet, her Draught of water 21 feet: of Burthen in all 2072 Tuns, & 1554 Tuns besides Guns, Tackle &c. This mighty moving Castle hath six Anchors, whereof the biggest weighs 6000 lb, & I least 4300 lb. It hath 14 Cables, whereof I greatest is 21 inches in compass, & weighs 9000 lb: her least Cable being 8 inches in compass, weighing near 1300 lb.

To I Royal Sovereign belong 18 masts & yards, whereof the greatest

greatest, called of main Mast, is 175 feet long, her main
yard 97 feet long, & her ~~main~~ fore Mast top 15 feet diame-
ter: She hath 10 several sorts of Sails of several names,
(as every Ship of every one off 6 Rates hath) whereof her
greatest Sail called her main Course (together with her
Bonnet) contains 1640 yards of Canvas, & of which double
& of least Sail, called of fore top gallant Sail, contains 130
yards of Canvas. The Charge of one compleat Suit of
Sails for of Sovereign is 404 pounds Sterling money.
The weight of of the Store in point of ground tackle &
other Ordnage is 60 Tuns 800 & 500 pounds. She carries
a Long Boat of 50 feet, a Pinnace of 36 feet & a Skiff
of 27 feet long. The weight of of Rigging is 33 Tuns.
She hath 3 Tiers of Guns all of Iron, whereof there
are 44 in her upper Tiers, 34 in her 2^d Tiers & 22 in
her lower Tiers, in all 100 Guns. She carries in all,
of Officers, Soldiers & Mariners 700 Men. Finally,
her whole Charges for Wages, Victuals, Ammunition,
wear & tare for every month at Sea, costs of King
3500 pounds Sterling, the Charge of building a
Ship of of first Rate, together with Guns, Tackle & Rigging,
(besides Victualing) doth ordinarily amount to about
26000 pounds, those of lower Rates proportionably.

Page 332. That we may of better guess at of number of Inhabi-
tants or humane Sokes in this great City, he must know
that in one year there was computed to be eaten in London,
when it was left by one 4th part, 67500 Beefs, 10 times as
many Sheep, besides abundance of Calves, Lamb, Swine,
all sorts of Poultry, Fowl, Fish, Roots, Milk &c, also that
(Communis Annis to Supply London with new of the
Cale, there is brought into of River of Thames 270000 Chal-
dron, & every Chaloron is 36 bushels. Again of number
of Inhabitants may be guessed at by of Burials & Births in
London, is in ordinary years when there is no Pestilence
amount of late to fifteen or 16 Thousand in a year, 3 times
more than in Amsterdam. There was in of year 1667 -
according to exact computation brewed within of City of London
Honey

452563 Barrells of Strong Beer, at 12/6: and 580421 Barrells of Ale at 16/. and 429797 Barrells of Table or Small Beer at 6/6. The Beer Strong & Small is 36 Gallons to 1 Barrell, & 1 Hottle 32 Gallons. Notice that some hereof is Transported beyond Sea, but that is scarce considerable. The Excise only of Beer & Ale for 1 City of London (tho' very moderate) is Farmed or Rented of 1 King at above 120000 pounds a year.

In Atkinsons Epitome of Art of Navigation.
Page 272 &c.

An easy & Exact way to measure a Half Minute Glass.
Let a Plummet of any form or Weight, be fastned to one end of a Thread, or silk-string that is 38½ inches long, & at 1 other end is a Loop or Noose, to hang it on a small Pin or Nail, fastned in any Place, so that 1 Plummet may Swing freely. Then 1 Loop of 1 String being hung on 1 Pin, the String 38½ inches from 1 Center of Gravity to 1 Center of Motion: that is 38½ inches from 1 end of 1 Loop, to 1 middle of 1 Plummet: and 1 Plummet caused to swing, each of those Swings shall be a true Second of time, and 30 of them 1 just length of 1 Half-minute Glass. Always counting 1 Swings both forward from, & backward to 1 Perpendicular, supposed to fall from 1 Pin whereon 1 String doth hang: For Half a Second of Time is measured every time 1 Plummet passeth from 1 Perpendicular to its utmost swing both ways.

But when 1 Ship hath any Considerable motion make 1 String 7 inches shorter & there make a knot to hold it by between your finger & Thumb, then by 1 motion of 1 Hand, cause 1 Plummet to ascend to an Angle of about 60 Degrees every Swing from 1 aforesaid Perpendicular; then each Swing shall be equal to those beforementioned: So that by this Experiment, you may measure a true Half minute of Time without a Glass, and by it examine 1 Truth of any Glass.

H. Mr. Greenwood says 1 String must be 29,2 to vibrate 2.

From Hamilton's new account of East Indies, Vol. 2.

Page 131. Speaking of Rambang on the Island Java, they have one dangerous little Animal called a Jackoa, in shape almost like a Lizard. It is very malicious, & bites at every thing that offends it, & wherever the Liquor lights on an Animal Body, it presently cankers & fests, unless immediate Causticizing is used, & if that cannot be had, the Piece must be cut out, for if once it blisters the Skin, there is no Cure for it afterwards; but he seldom fails of giving notice where he is, by a loud calling Jackoa.

I was once at supper with some Dutch Gentlemen at Rambang, in an House thatcht with Cocoa-nut leaves, and we were no sooner set, but one of those Jackoas opened his Throat almost over our Heads. The Dutch Gentlemen took the Alarm, & arose from y^e Table in great haste, & ran out of y^e Room, calling to me, who sat still (not a little surpris'd to see their sudden flight) to follow them, for my life was in danger, and, on hearing that demonstration, I was not long after them, but its noise spoiled our Supper.

As there are many species of wild Animals in those woods, there is one in particular called the Oran Outang. It is nearest to Humane, both in shape & Sagacity, among all y^e kind of Animals. I saw one about 4 foot high, gross Bodied, long Arms from y^e shoulders to y^e Elbows. His fingers ends reach just to his Knees, as he stood upright. His Thighs & Legs plump, but too small in proportion to his Body. His Feet long, and broad at y^e Toes, but a little too narrow at y^e Heel. His Belly prominent, covered with a light coloured Fur, the rest of his Body being brown, & the Fur thicker & longer than y^e Belly Fur. His Head somewhat large. His Face broad & flat. His Ears gray & small. His Nose little & flat. His

His upper-Lip & under-Jaw very large. He blows his Nose, and throws away of Snout with his Fingers, can kindle a Fire, & blow it with his Mouth. And I saw one Boil a Fish to eat with his boiled Rice. The Females have their regular Menstrua. They have no Tail & walk upright. They are of a melancholly disposition, & have a grave dejected Countenance, even when they are young, they are never inclined to play, as most other Animals are. There is a smaller sort, but of a different Species, called Oumpas; but their Legs & Arms are very small.

They have many large Gold-fishes or Alligators in their Rivers & Marshes, and sometimes they go a mile or two off to Sea, & get foul of Fishers Nets. I was cleaning a Vessel (that I bought at Samarang) on a bed of Ooze, had Stages fitted for my People to stand on, when of Water came round the Vessel; and we were plagued with 5 or 6 Alligator which wanted to be on of Stage, & every moment disturbed our Men, so I, & two of my men, sat on the Vessels Deck, & fired muskets at them, but our Ball did 'em no harm, for their hard scaly Coat was shot proof. At last we contrived to shoot at their Eyes, & we shot at one so, as soon as he found himself wounded, he turned Tail to us, & with great flouncings made to the shore, about half a mile from us, & I rest following him, we were pretty quiet after that. A Day or two after, some Fishers told us, they had seen a Dead Alligator on the shore, & pointed whereabouts, I went in a boat, a shore, and found him lying at full length: I measured his length, & found, from his Nose to his Tail 22 feet, & he was about one third part his length in circumference about his Belly.

Page 217. Speaking of Maccaw a City build by Portugueres in Canton or Quantung, in China, say, there is of largest Brass Cannon Mounted in Batteries about of City, I ever saw. I measured one (amongst many) out of Curiosity, & found it 23 in. from the

of Breech to of Muzzle Ring, $9\frac{1}{4}$ inches Diameter
in of Bore, & it was 12250 Rotullacs or lb weight of
Solid metal.

Page 235. Speaking of of City Canton, in of Province
of Canton, he says, The People are Ingenious, Civil
& Industrious, but are too Numerous, which makes them
tolerate a base & cruel Custom, that when a man
thinks he has too many Daughters he may destroy as
many as he pleases of them, but they do not kill them
on a right, but serve them as groves was in Egypt, by
laying them on an Ark of Reed, & letting them float
on of stream of a River while they are Infants, & if
any Charitable Persons see them, & Commiserate their
Condition, they may take them out, & bring them up as
their own, either for Marriage, Concubinage or
Slavery.

Page 238. He says, He made a Calculation of
Inhabitants within of Walls of Canton, by of quantity of
Rice daily Expended in it, 10000 Pecul being Required
of daily Import of it, & one Person is reckoned to Consume
one Pecul in 3 months, so by that Calculation there
must be about 900000 People in it, & in of Suburbs
a third of that number, & there is no Day in of Year
but fleets 5000 Sail of Trading Jonks, besides small
boats & other Services, lying before of City.

From of American Magazine for Nov^r 1793.

There are of List of of House Peers, Dukes	27
Marquises, 5 English, 1 Scot	2
Bisps, 73 Eng. 14 Scots	27
Vicounts	54
Barons, one Scot	68
Great Officers who preceed Dukes	7
	<hr/> 205

For of Month of December.

- There belongs to of Lower House 553, whereof 12 belongs
to Wales & 45 to Scotland.

From *J American Magazine* for Feb^r 1745, taken
from *J Present State of Great Britain*.

The Royal Navy of England consists of 7 Men of War of 100 Guns,
13 of 70, 16 of 60, 23 of 50, 19 of 40, 47 of 30 (that is 125 of 7 Guns of
Battle) besides 23 of 40, 9 of 30, & 25 of 20; in all 582.

The Charges of Building a Ship of 1st Rate, together with *J* Guns Tackle & Rigging (besides victualling) doth ordinarily amount to about 60,000 Pounds; Those of lower Rates proportionably.

To Man *J* Royal Navy of Great Britain requires about 36,000 Mariners. In *J* late War there were actually raised 40,000 Men some Years to Man *J* Royal Navy, and *J* First & Second Rates were scarce ever all of them in Commission at once.

The Royal Sovereign Built at Woolwich by Mr. Fisher Harding, Master Shipwright of His Majesties Yard at Deptford, was launched 25th of July, 1708, & is of *J* following Dimensions. The Length of *J* Taffrel to *J* Head, 216 Foot. The Gun 110. The Men full Complement 1250. The Breadth 50 Foot. The Tunn 2000. The full Tread, 158 Foot. The Draught of Water, 22 foot. The Cloath 50,544 Yards. The main Sail in Length 54 Yards. Ditts in Depth 16 Foot 6 Inches. The main Mast in Length 39 Yards. The Diameter of *J* 38 inches. The Weight of *J* Anchor 32-5-14. The Cable in Length 200 Yards. The Diameter of *J* 22 inches.

From *J American Magazine* for May 1745. Taken
from *J Craftsman*, Feb^r 16. N^o 937.

We have now 6 Ships of *J* first Rate, 100 Guns each, & 930 Men each; we have 16 Ships of *J* Second Rate, 90 Guns & 750 men each; we have 59 third Rate Ships, 12 whereof are 80 Guns, & 600 men, 23 of which are 70 Guns, & 480 men, & 24 of which are 60 Guns, & 400 men; of Fourth Rates, we have 35 of 50 Guns, & 250 men each; & 6 of Fifth Rates, 16 of which have 40 Guns, & 240 men each; the Number of our sixth Rates is 22, one of which is of 24 Guns, & 150 men, the rest have 22 Guns, & 130 men each. We have 17 Fire-Ships, 9 Bomb-Ketches, 2 Store-Ships, 2 Hospital-Ships, 18 Sloops & 7 Yachts. In *J* several Parts of *J* West Indies, belonging to us, we have now 19 Ships of War (exclusive of *J* preceding List) stationed. The Victory, Northumberland & the *Leif* not reckoned. The 6 Rates 156, Five Ships & 50, in *J* West Indies 19; Total 225.

To Manbino

Urbanity & Civility are a Debt we owe

They found the soil to be very fertile;
& therefore they began to build dwelling
houses and ~~houses~~ Houses of Public
Worship, and had many Pious
Ministers ~~to~~ to instruct them in
the way they should go; but yet
they were often molested by these
brutish Savages, but some of
them proved very Mild, and
Exchanged Necessary things.
and After they had Erected

and it

Perxes the great did die & so must you

Many noble Structures, ~~they~~
though fit to build a Seminary;
And therefore they chose a Place
~~for~~ that Purpose In Cambridge.
which is Now an Excellent College.

After ~~we~~^{they} had continued here some
Considerable time; and began to be
famous for trade; Old E. thought pro-
per to take ~~us~~^{them} under ~~his~~^{their} Inspection
by laying imposing heavy Taxes upon
~~us~~^{them}; After The People had ser-
ved him a Considerable Time;

Remember thy creator in thy Youth.

To Remember ones Creator in Youth, so as to be mindful of him in old Age, is truly commendable: And is sufficient to cause every considerate and moral Person to determine never to be ~~unmind~~ful of him, by whose Aid they have ~~been~~ ^{been} ~~secured~~ ^{secured} & fortified from innumerable Accidents, which are incident to the human Race: therefore to be unmindful of our Creator would be ingratitude to the extreme, And
"Ingratitudo est Filia Diaboli." —

Therefore seeing we are under indispensable Obligations to pay him our supreme Homage let us not forget him especially in our youthful Days; for if we forget him while in our youthful Days; it is not probable that we shall have any Recollection of him in Old Age. —

For sake Lying and love the truth.

A Lie is an absurd Vice; yet practis'd almost universally by the human Race. Indeed there are some Cases in which it ~~ought not to~~ is not so reprehensible as in others; as for Instance, When a Man falls into the hands of Savages, he is not to be blamed if he persuades them that he is of a Nation of which they stand in fear, and by that means saves his life. The Scripture itself says, 'The truth is not to be spoken at all times'. But I would by no means justify a Vice which is so foolish & vain in General, and hardly ever advantageous.

Wisdom is better than Rubies. I

Among all our pursuits in Life, Wisdom is to be ~~valued~~^{esteemed} the most useful: its Advantages are innumerable, its worth inestimable; in short its Possession is more desirable than the most elegant Rubies.

It is by this that we are enabled to render Life in a Measure more agreeable by avoiding those Anxieties, which disturb the Heart. Simple, it is by this also, that we shun all vicious and ungodly Companions, as being convinced of the tendency of their Conversation to corrupt our Morals, it is this also that points out to us that most important and inestimable Religion. Proverbs, which we are told by ancient writers is a divine Precept, and even God himself says, For the Lord only makes our steps known and all our knowledge is ourselves to be

Notes from Dr. Cotton Mather's Christian Philosopher.

Essay 1st of Light, Page 11th Mr. Romer, from his accurate observations of Eclipses and Satellites of Jupiter, their immersions & Emergences, thinks he has demonstrated, That light Requires one Second of Time to move 9000 miles. He shews that Rays of light require ten minutes of Time to pass from the Sun to us. And yet Mr. Hevelius hath shewn, That a Bullet from a Cannon, without abating its first Velocity, would be 25 years passing from us to the Sun. So that the motion of Light is above a million times swifter than that of a Cannon Ball; yea we may carry it much further yet so.

We suppose the Distance of the Sun from the Earth to be 12000 Diameters of the Earth, or suppose 10000, the Light of the Sun runs 1000 Diameters in a minute; so it is at least 130000 in a Second. Dr. Cheyne shews that Light is about six Hundred Thousand times more swift than Sound. Amazing Velocity! To check our surprise at so swift a motion, I may propose one that shall be as very surprizingly slow. See affirms that Cardan together saw an Infusorin, in which was one that continually moving with the Earth & yet would not finish its Revolution under the space of Seven Thousand Years. 'Tis easy to conceive with Stevinus, an Engine with 12 Wheels & a Handle of such an Engine to be turned about 4000 times in an Hour (as is as often as a man's Pulse does beat) yet in 10 years Time the Weight at the Bottom would not move nearly so much as an Hair's breadth; And as Mercurius notes, it could not pass an Inch in 1,000,000 Years; although it be all this while in motion, & have not stood still one moment.

Essay 2^d of the Stars.

Page 17th Telescopes Invented of Beginning of 17th Century. & are come to be 80 feet long.

Page 18th According to Mr. Hugen, ϕ Distance off
Sun from us is 12,000 Diameters of ϕ Earth. A Diam.
of ϕ Earth is 7,846 Miles. The Distance of ϕ nearest fixed
Star from us. Compared with ϕ of ϕ Sun, is as 27,664 to 1.
So then ϕ Dist. off nearest fixed Star is at least 2,404,520,
922,000 Miles; which is so great, that if a Cannon Ball
(going all ϕ way wth ϕ same velocity it has when it parts wth
 ϕ mouth of ϕ Gun) would have arriv^d ϕ in 700,000 Years.
Great God, what is thy Immenfity!

Essay 3^d Of ϕ Fixed Stars. Page 25th Tho we in
 ϕ Globe approach nearer to them, some 24,000 Diameters
off ϕ Earth, or 188,304,000 Miles, one time of ϕ Year than
another; yet their Parallax is hardly sensible, or any at all.
It could not be if ϕ Distance w^o not wonderfull.

Essay 4th of ϕ Sun. Page 27th The apparent Diam.
of ϕ Sun being sensibly greater in ~~ϕ Winter~~ December
than in June, it is plain, ϕ observation Confirms it, that
 ϕ Sun is Proportionably nearer to ϕ Earth in Winter than in
Summer. It is also confirmed, by ϕ Earths Moving
Swifter in December than in June; wth it doth about five
Fifteenths. And for ϕ Reason ϕ are about 8 Days more
from ϕ Suns vernal Equinox to ϕ Autumnal, than from ϕ
Autumnal to ϕ vernal.

According to Cassini ϕ Suns mean Distance from ϕ Earth
is 22,000 Semidiameters off ϕ Earth. And ϕ Sun Diameter
is Equal to 100 Diam. of ϕ Earth: And therefore ϕ Body of
 ϕ Sun must be 1,000,000 times greater than ϕ Earth.
Cassini more directly expresseth himself; That ϕ Suns
Distance from ϕ Earth is 172,800,000 Eng. Miles.

Page 30th The Diam.ⁿ of ϕ Earth is near 8,000 Miles, & ϕ
Diam.ⁿ of ϕ Orbis Magnus ten thous. Diam.ⁿ of ϕ Earth. This
Orbis Magnus, or ϕ Orbit of ϕ Earth, in its Natural Revolution
about ϕ Sun, Dr. Gregory makes ϕ Semidiameter of it 94,696,969
Eng. Miles; wth is ϕ Dist. of ϕ Earth from ϕ Sun. All Astronomers
before Kepler supposed ϕ Orbit a perfect Circle; but he has proved it an Ellipse.

And all our

Essay 9th of Mercury. Page 39th But let us now entertain our selves with a Synopsis, of certain matters Relating to ϕ Planets, as ϕ are determined by ϕ latest and most accurate Astronomers.

The Distance from ϕ Sun in Eng. Miles.

Of Mercury	— Miles	32,000,000
Venus	—	59,000,000
The Earth	—	81,000,000
Mars	—	123,000,000
Jupiter	—	424,000,000
Saturn	—	777,000,000

The Diameter in English Miles.

Of Mercury	— miles	4,240
Venus	—	7,906
The Earth	—	7,935
Mars	—	4,444
Jupiter	—	81,155
Saturn	—	67,870
The Sun	—	763,460

The Time of ϕ Periodick Revolution.

	Days	Hours
Of Mercury	87	24
Venus	224	17
The Earth	365	06
Mars	686	23
Jupiter	4,332	12
Saturn	10,759	07

Page 45th A ^{not} found would arrive to us from ϕ fixed Stars in 70 thousand years, nor a Cannon Bullet in a much longer time.

Dr. Wallis

Dr. Wallis

Essay 17th Of γ Air. Page 66.th

Gallens found γ water could not be Raised by Pumping ~~it~~ any higher than 34 or 35 feet.

Mr. Boyle found by Repeated Experiments, that γ Weight of Air to Water is as 1 to 1000.

If a γ Superficies of a Mans Body Contains 15 Square feet, it is pretty near γ truth, he would Sustain a Weight Equal to 39,200 Pounds Troy, it is above 13 Tuns. The Difference between γ greatest & γ least Pressure of γ Air upon our Body is equal to 3982 Pounds Troy. No Wonder γ we Suffer in our Health by Change of Weather.

Essay 18. Of γ Wind. Page 71. The Inquisitive & Ingenious Mr. Derham found by many Trials, that γ Wind in a great Storm does more about 50 or 60 miles in an Hour. That a Common brisk Wind moves about 15 miles an Hour, But so gentle is γ Course of many Winds, that they do not Exceed one mile an Hour.

Dr. Grew observes, that γ are Winds (besides γ Trade Winds) especially from γ West, do Blow sometime 2 or 3 days upon one Point, & will in γ time drive before γ a ship 150 Leagues, or 450 Eng. miles.

Essay 20. Of γ Terraqueous Globe. Page 78. Our Globe is nearer to γ Sun in December than in June. The Suns Apparent Diam^r is Greater then, & our Globe then Has a swift^r or motion by a 25th Part. The colder & more northern parts of our Globe are indeed Brought some Hundred, or Thousand of miles nearer γ Sun in Winter than in Summer.

Essay 21. Of Gravity. Page 83. According to γ exquisite Hally & Huygens, the Decent of Heavy Bodies is after γ Rate of about 16 foot in one 2^d of time. Nevertheless Power increases as you descend to, decreases as you Ascend from γ Center of γ Globe, & that in propor. of γ Square of γ Distances therefrom Reciprocally; so as for instance, at

at a Double Distance to have but a quarter of $\frac{1}{4}$ force.
A Tun weight only Surface of $\frac{1}{2}$ Earth, Raised Heavenwards
unto $\frac{1}{2}$ Height of on Semidiameter of $\frac{1}{2}$ Earth from hence,
would weigh but one Quarter of a Tun. At three Semi-
diameters ^{from $\frac{1}{2}$ Surface} of $\frac{1}{2}$ Earth, it would be as easy for a man to carry a
Tun, as here to carry little more than 100 pounds. At $\frac{1}{2}$ Dist.
of $\frac{1}{2}$ Moon is suppose to be 60 Semidiameters of $\frac{1}{2}$ Earth, 3600
pounds weigh but one pound; & $\frac{1}{2}$ fall of Bodies is but 16 foot
in a whole minute. Page 84. Mr. Keil shews, that $\frac{1}{2}$
Force of Gravity to $\frac{1}{2}$ Centrifugal Force, in a Body placed at $\frac{1}{2}$
Equator of our Globe, is as 289 to 1; so that by $\frac{1}{2}$ Centrifugal Force
arising by $\frac{1}{2}$ Earth's Rotation, any Body placed in $\frac{1}{2}$ Equator
looses a 289th part of $\frac{1}{2}$ Weight it would have if $\frac{1}{2}$ Globe were
at Rest. And since there is no Centrifugal force at $\frac{1}{2}$ Poles,
a Body there weighs 289 pounds, which at $\frac{1}{2}$ Equator would weigh
but 288. On our Globe $\frac{1}{2}$ Decrease of Gravity, in going from $\frac{1}{2}$
Poles towards $\frac{1}{2}$ Equator, is always as $\frac{1}{2}$ Square of $\frac{1}{2}$ Co-sine of
Latitude.

Essay 22. Of Water. Page 88. Pure Water is a fluid
void of all vapor, & seems to consist of small, smooth, round
& Porous Particles, that are of equal Diameter & equal Gra-
vities. There are also between them spaces, that are so large,
& Ranged in such a manner, as to be on all sides Pervious.
Their smoothness accounts for their sliding easily over the
Surfaces of one another. Their Roundness keeps them from
touching one another in more Points than one. So great
is their Porosity, that there is at least Forty times as much
Space as matter in Water. For Water is 19 times spe-
cifically lighter than Gold; but Gold will by Pressure
let Water thro' its Pores, & has doubtless more Pores than
Solid ~~matter~~ Parts.

Page 91. According to Mr. Halley's Experiment, Water as
warm as Air in $\frac{1}{2}$ Summer, will in 12 Hours exhale $\frac{1}{2}$ 100th part
of an Inch. This Quantity will be found abundantly sufficient
for all $\frac{1}{2}$ Rains, & all $\frac{1}{2}$ Dew, & all $\frac{1}{2}$ Springs in $\frac{1}{2}$ World; and will
Account for $\frac{1}{2}$ Caspian Sea, & our vast Canadian Lakes, being
always

Always at a Stand; and for $\frac{1}{2}$ Currant $\frac{1}{2}$ always to Set in
of Streights of Gibraltar, tho' $\frac{1}{2}$ Mediterranean Sea receive
So many Rivers. Every 10 Square Inches of $\frac{1}{2}$ Surface of $\frac{1}{2}$
Water, yields in Vapour per diem [we allow it only for $\frac{1}{2}$
 $\frac{1}{2}$ time $\frac{1}{2}$ Sun is up] a Cube Inch of Water. Every mile
will yield 6914 Tons. A Square Degree of 69 English miles
will yield 33 millions of Tons. If $\frac{1}{2}$ Mediterranean Sea be
Estimated at 40 Deg. long. & 4 broad, is is $\frac{1}{2}$ least, the whole me-
diterranean must loose in vapours in a summer's day at least
5280 millions of Tons. And yet sometimes $\frac{1}{2}$ Winds lifts up
Surface of Water faster than it Exhales by $\frac{1}{2}$ heat of $\frac{1}{2}$ Sun.
The mediterranean Sea Receives nine Considerable Rivers,
We will suppose each of them to bring down 10 times as much
water as $\frac{1}{2}$ River Thames, is $\frac{1}{2}$ $\frac{1}{2}$ do not; But $\frac{1}{2}$ will allow for
 $\frac{1}{2}$ Smaller Rivulets. The Thames allowing $\frac{1}{2}$ Water to Run
after $\frac{1}{2}$ Rate of two miles an Hour, may yield 20,300,000 Tons
per diem. Allow as before & all $\frac{1}{2}$ Rivers bring down 1827
millions of Tons in a day. This is but a little more than a
Third part of what is proved to be evaporated out of $\frac{1}{2}$ mediterranean
in 12 Hours time. Page 94. The Danube in a Lober
Account, as Bohun computes, runs 14 Hundred Miles from its Rise
to its fall. The Nile according to Varenus, allowing for Curvatures,
runs 3000 Miles; & $\frac{1}{2}$ Niger 2400; $\frac{1}{2}$ Ganges 12 hundred; the Ama-
zonian above 13 hundred Spanish Leagues.

Essay 24. of Magnetism. Page 105. It was Roger Bacon
who first of all discovered $\frac{1}{2}$ Verticity of $\frac{1}{2}$ Magnet, or of its
Property of Pointing towards $\frac{1}{2}$ Pole, about 400 years ago.
The Communication of its virtue to Iron was first of all discovered
By $\frac{1}{2}$ Italians. Gioia first ~~light~~ set upon $\frac{1}{2}$ use of $\frac{1}{2}$ mariners
Compass, about A.C. 1300. After this $\frac{1}{2}$ various declination
of $\frac{1}{2}$ Needle under different meridians, was discovered By Cabbot &
Norman. And then $\frac{1}{2}$ variation of $\frac{1}{2}$ declination, is as not to
be always $\frac{1}{2}$ Same in one & $\frac{1}{2}$ Same place, By Hevelius, Aurost, vol-
kammer & others. The Inquisteine Mr Derham Says The Variation
of $\frac{1}{2}$ Variation was first found out by our Gillibrand A.C. 1634.

Essay 26. Of Vegetables. Page 135. The Persuasion
is mankind has imbibed of Tobacco being good for us, has in a
Supposing manner prevailed! What incredible Millions have
Sunk in an opinion, that it is an usefull as well as a plea-
sant thing, for them to spend much of their time in drawing
thro' a Pipe of Smoke of y^e lighted Weed! It was in y^e year
1585, that one Mr Lane carried over from Virginia some To-
bacco, & was y^e first y^t had ever been seen in Europe; & within an
100 years of Smoking of it grew so much in fashion, that y^e very Cust-
oms of it brought 400,000 pounds a year into y^e English Treasury.

Essay 27. Of Insects. Page 158. Lately in my
Neighbourhood a poor man reaching to vomit, a monstrous
Worm thrust up one end of its self, & y^e man laid on,
fell to pulling of it, as a Fisherman hales up his Line,
& pulled till y^e Worm lay in an enormous heap; whence
being drawn into its length & measured, y^e Worm, in y^e
full Extent of it, made about one Hundred & Fifty Foot long

Essay 32. of Man. Page 223. The Erect Posture of
Man, y^e Os Sublime, how Commodious for a Rational Creature
who must have Dominion over those that are not so, & must
Invent & Practice things usefull & Curious! By this Posture Man
has y^e use of his Hands, is as Galen observes, *abe, organa sapienti-
ti Animalis convenientia*; and his Eyes, is as they have the
Glorious Hemisphere of y^e Heavens above him, so they have y^e
Horizon of 3 miles on a Perfect Globe about him, when they
are Six foot High, & by y^e Refractions of y^e Atmosphere they
have much more than so. Page 230. The Bones in a Skele-
ton are 245 besides y^e Offa Sepamoidæa, is are 18. The Muscles
of y^e Body are 446. The nerves is come immediately out of y^e
Skull from y^e Medulla Oblongata, are Ten pair. The nerves is
come out between y^e Vertebrae, are 30 pair. Page 242. Dr
Willis tells of one who hired a Servant who was a Drummer, on
purpose that his deaf Wife might hear his Discourses, which
while y^e Drum was Beating, she was able to do.

Page 249. The biggest Bell in Europe is reckoned to be at Erfurt in Germany, it may be heard, they say, 24 miles. Page 250 Claus Magnus describes a Cave in Finland, into it if a Dog or any other Animal be cast, it sends forth so dread full a Sound as to knock down everyone that is near it; and they have therefore guarded it with high Walls to prevent such a mischief. Peter Martyr informs us of a Cave in Hispaniola, if with a small Weight cast into it, will with its tedious noise at 5 miles Distance endanger Deafness. There are several other Instances of like nature in the same Page. Page 251.

Livers at & Bottom of Sea can hear noises made above, but Confusedly; those above cannot hear of Livers ^{below} at all. Dr Hearn tells of Guns fired at Stockholm, & were heard an 180 English miles. In Dutch War, Guns w^{ere} heard above 200 miles. Celebrated Authors differ about the Velocity of Sounds. Mr Des. ham has by nice Experiment determined, that there is a small Difference in Sound before & Wind & against it, & this a little abated or augmented, according to the Strength of Wind; but nothing else in the World will affect it; & there is one motion to all kind of Sounds, whether Loud or Low; & they all fly equal Spaces in equal times; & lastly the mean of their flight is at the Rate of a mile in $9\frac{1}{4}$ half Seconds, or 1542 Feet in one Second of Time. That is 13 miles wanting 124 feet in a minute

Page 265. In Fine, the Heart is a Compound Muscle, & each ventricle of it will (as Dr Hall observes) contain an ounce of Blood. We may well suppose the Heart throws into the Arteries an ounce of Blood every time it Contracts; the Heart Contracts 9000 times in one Hour Sometimes more, Sometimes less; hence their pulses thro' the Heart every hour 4000 Ounces of Blood, that is to say, 350 pound now the whole mass of Blood is no more than 25 pound, so that a quantity of Blood equal to the whole mass passes thro' the Heart 14 times in one Hour; & it is about once in every 4 minutes; not the whole mass it self; we don't suppose the Blood if goes to the Extremities, can return to the Heart as soon as if the Blood is goes only to the Kidneys or Liver. Page 267. The Operation of the Stomach is mightily Resembled By the

The Digestor of Monsieur Papin; in this if Meat is put together with so much water as Exactly fills y^e Engine, the Lid is then Screwed on so close as to admit of no external Air, & with two or three Lighted Charcoal, or y^e Flame of a Lamp, it is Reduced into a perfect Pulp, or indeed a liquor, in a very few minutes, in 6, or 8, or 10, or 12, or 16, according to y^e Toughness of y^e matter to be digested, or y^e Augmentation of this little fire; this way even y^e hardest Bones are presently dissolved.

Page 275. The Blood for y^e Body of Man Bears y^e Proportion to his Weight, of one to Ten; in other Animals tis but one to Twenty. And for y^e fetching of Spirits out of this Matter, there is y^e Laboratory of y^e Porain, in a Man is twice as much as in a Beast four times as big.

Page 286. Homers Iliads have 31670 ^{verses}, his Odysses no less; and yet y^e Younger Scalliger committed all Homer to his Memory in 25 Days.

Page 289. But then there is another thing wherein y^e Suprintendence of y^e Glorious Creator & Governour of y^e world is most Conspicuous; & that is, y^e Progress of y^e Invention of Men has made: things of Greater use w^{ch} sooner invented, things of a less use later; every thing in y^e time w^{ch} in our Great God has had his excellent purposes to be served with it; things equally plain with such as have been formerly Discovered, & as much desired, have been locked up from Humane understanding, till y^e God, in whose hand are our times, is pleased wisely to make them understood by y^e Children of Men. Why must Printing be withheld from y^e Service of Mankind till y^e year 1430, w^{ch} y^e first Book of Printed Books was by y^e Hand of Laurence Koster midwifed into y^e world, & y^e still immediately improved by Faust & Schoeffer? Why must Mankind have no Telescopes till y^e year 1609, w^{ch} one whom Syrtarus would suspect at most an Angel in y^e Shape of a Dutchman, instructed Lippersein at Middleburgh to Proceed upon y^e m? We will pass to another instance The Romans had not so much as a Sun-Dial till y^e 2^d Punic War, & when they had one, they had no more than that one, in y^e Forum above an 100 Years, the Story says it never went Right in all this time. Our King Alfred had no better Shift than this for measuring his Hours.

The Burning of a Candle, marked into 12 parts, for is a
Lanthorn was needfull to secure it from of wind off Windows,
for Glaring was not yet in Fashion. Dr. Grew observes, the
first Concoit is tended to a Watch, was a Draw-well; first, People
found of Drawing of Water with a Hand-cord & a Pitcher troublesome,
so they thought of Draught-wheel; By & by they Conceived such a move-
ment applicable to a Spitt, if of motion off Weight could be made
flow enough, this was done by adding more Wheel, & a Flyer, which
made a Jack: By & by men began to see, that if of motion w^o get
flowed, it would serve to measure Time also, then instead of a
Flyer they put a Balance, & thus made a Clock; this being
so usefull, men considered how it might be made Portable, by
something Answerable to a Weight, & so instead of that they
put of Spring & of Fuse-wheel, to make a Watch. Here is the
Pedegree of of Noble Engine. But to what an astonishing
Perfection is Clockwork, & Watchwork now arrived!
At length Mr. Huygens has invented of way of applying Pen-
dulum, to watch-work. — The first of was made in England
was in of Year 1662. The uses of these Pendulum Watches
cannot be sufficiently celebrated.

Page 291. If of Mathematicks is haveing of two last Centuries
had such wonderfull Improvements, so for 200 Years more improve
in proportion to of former, who can tell w^t mankind may come to!
We ^{must} believe, without having Seneca our Author for it, multa
venientis aevi populus ignota nobis fiet. [many things unknown
to us will become understood by of People off next age].

Page 217. The Account is honest Leguat gives off Solitary
Bird, is he & his Companions Observed on of Ile of Rodrigo,
is as Admirable as unquestionable; The Bird has Wings, But so
small that it cannot fly with them, they serve to Flutter
with a mighty Noise w^h they call one another; they never
Lay But one Egg, is bigger than that of a Goose; the Male
& Female Set upon it in their turns, & all of while they
are hatching it, or bringing it to Provide for its self, (is
is Divers Months) they will not suffer any other Bird
of their own Species to come within 200 yards Round of
of Place: But this is very Singular, the males will
never

Never Drive away if Approaching Females, but call for y^r own Females to do it; the Female does if like, and upon y^e approach of any other Males, call y^r own Males to Chase y^m away. After these Birds have Raised their Young One, & left it to its Self, we have often Observed (says my Ingenious Traveller) that some Days after y^e young one leaves y^e Nest, a Company of 30 or 40 Brings another young one to it, & y^e new Sledged Bird, with its Father & Mother joining with y^e band, march to some By-place; we frequently followed them, & found that afterwards y^e Old ones went each their way alone, or in Couples, & left y^e young ones together, which we called a marriage. My Religious Traveller does give all Possible Assurance for y^e Truth of this Relation, & adds, I could not forbear to Entertain my mind with several Reflections on this Occasion. I sent Mankind to Learn of y^e Beasts. —

Essay 31. of Four footed. Page 200. There is one very odd & Anomalous, w^h has but 3 Claws on each of his Four Feet, & has a Namesake too often among them that go not upon Four, 'tis y^e Ignavus, a Sloth we call it: he takes 8 or 9 minutes to move one of his Feet 3 or 4 Inches; & when he has grown Fat & plump with eating all y^e Leaves on a Tree, he will be Skin & Bone before he reach another, & will be five or six Days, tho' it may be very near y^e former.

Essay 27. of Insects. Page 142. Even y^e poor Ephemeron, whose whole Period of Life is but 6 or 7 hours, who is bred & born, & lives, & goes thro' all his Operations, & Expires, & goes into his Grave, all within this little Period, must not be thrown into a Class of Imperfect Animals; nor may it be said of it, that it is made in vain. —

Notes from M^r. Will. Leybourn's Pleasure with
Profit, or Recreations Numerical, Geometrical, Me-
chanical, Statical, Astronomical, Horometrical, Crypto-
graphical, Magneetical, Automatical, Chymical & Historical.

Out of \S Statical part.

The Worth of Gold. $\left. \begin{array}{l} \text{one Pound Troy} \\ \text{ounce} \\ \text{one Pennyweight} \\ \text{Grain} \end{array} \right\} \text{is worth}$ $\left\{ \begin{array}{l} \text{£. s. d.} \\ 40-00-0 \\ 3-06-8 \\ 0-03-4 \\ 0-00-1\frac{1}{2} \end{array} \right.$

This is \S Price of Ordinary Gold: Angel Gold is worth some-
what more; and Sovereign Gold Somewhat less.

The Worth of Silver.

$\left\{ \begin{array}{l} \text{Pound Weight} \\ \text{ounce} \\ \text{one Pennyweight} \\ \text{Grain} \end{array} \right\} \text{Troy is worth}$ $\left\{ \begin{array}{l} \text{£. s. d. q.} \\ 3-0-0-0 \\ 0-5-0-0 \\ 0-0-3-0 \\ 0-0-0-0\frac{1}{2} \end{array} \right.$

But of English Coin,

of $\left\{ \begin{array}{l} \text{Gold} \\ \text{Silver} \end{array} \right\} \left\{ \begin{array}{l} \text{one pound} \\ \text{Troy is worth} \end{array} \right\} \left\{ \begin{array}{l} \text{£. s. d. q.} \\ 40-18-4-3 \\ 3-02-9-0 \end{array} \right.$

of $\left\{ \begin{array}{l} \text{Gold} \\ \text{Silver} \end{array} \right\} \left\{ \begin{array}{l} \text{one pound} \\ \text{Averdupois} \end{array} \right\} \left\{ \begin{array}{l} 49-13-8-1 \\ 3-15-3-2 \end{array} \right.$

Of \S Weight of Water, & other things, in Weight
& Magnitude.

one Ounce $\left\{ \begin{array}{l} \text{Troy} \\ \text{Averdupois} \end{array} \right\} \left\{ \begin{array}{l} \text{of Water Contains} \\ 1,8949 \\ 1,72556 \end{array} \right\} \left\{ \begin{array}{l} \text{Inches.} \end{array} \right.$

One Ounce $\left\{ \begin{array}{l} \text{Troy} \\ \text{Averdupois} \end{array} \right\} \left\{ \begin{array}{l} \text{of Water Contains} \\ 0,001096 \\ 0,00099859 \end{array} \right\} \left\{ \begin{array}{l} \text{Feet} \end{array} \right.$

One Pound { Troy } of Water is of { 22,7368 }
 { Averdupoise } Solid measure { 27,609 } Inches.

one Pound { Troy } of Water is of { 0,013158 } Foot.
 { Averdupoise } Solid measure { 0,115917 }

A Cubical Foot of Water Weigheth of Troy Weight
 912 Ounces; & is 76 lb. Troy.

A Cubical foot of Water weigheth of Averdupoise Weight
 999,463 Ounces; which is 62,588 lb. That is $62\frac{2}{3} - 6\frac{1}{2}$ ^{Drachms}.

The Proportion of Averdupoise Weight. to Troy is as 80 to 73.
 The Troy being $\frac{73}{80}$ of Averdupoise. Or in Decimals
 as 10000 to 9125.

The Proportion of Weight of Several Metals
 of same magnitude: supposing a Sphere of
 Gold to weigh a pound then other Spheres of same
 magnitude will weigh as follows, not reckoning less than
 a Grain, Troy weight.

	$\frac{3}{4}$ Pl.	Gr.		Ou.	Dec.	grs. Water
Gold	12	-00	-00	a Cubick Inch	9,91735	9,33962
Quickfil.	8	-11	-10	Air Weights	7,93388	7,35615
Lead	7	-05	-06		6,16198	5,58425
Silver	6	-10	-12		5,50083	0,18179
Brass	5	-13	-16	Copper	4,81342	4,23569
Iron	5	-01	-01	Hammered	4,27715	3,69942
Tin	4	-13	-11		3,96694	3,38921
			Cast Iron		3,96821	3,29048

By Weighing of overflowing Water when an Ir-
 regular Body is put therein, the Content of D. Body
 may be known

Out of $\frac{1}{2}$ Numerical part.

The Single Rule of Three Direct, is wⁿ 3 Num^{rs} are given & a 4th is demanded, it bears of same proportion to 3^d as 1st bears to 2^d first.

The Single Rule of Three Inverse, is wⁿ if are 3 Num^{rs} given, & a 4th Required it shall bear of same proportion to 1st, as 3^d doth to 2^d first.

A Table of Changes is made by Multiplying every Number from 1 unite successively into each others Product, unto 12th of unites assigned. Thus,

1	1	7	5040
2	2	8	40320
3	6	9	362880
4	24	10	3628800
5	120	11	39916800
6	720	12	479001600
		13	620448401733239439360000

And if 24th being 12th of letters in of Alphabet will be 620,448,401,733,239,439,360,000.

And so many words may be made by 24 letters, if of

Change of a letter in a word will make a new word, it is sufficient for many more than all of Languages in of worlds. Mr. Leybourn says if all of Books of might be made by words composed of of Alphabet & not write of same twice, would be a Decuple Covering for of whole Earth. The same may be of Numbers by of 9 Digits & Cyphers.

In of Automatical part. A Pendulum of 3 foot

3, 2 inches may be called of universal measure, & is of new length of a Pendulum of will swing seconds every vibrations: with Caution & Rule, As of length of of String from of Point of Suspension to of Center of a Round Ball, is to of Radius, so is Radius to a 4th number, 12th of that 4th number be added to of former length, for of length of of Pendulum.

The length of two Pendulums are in Proportion to of Squares of their several vibrations, & will be equal to of Beats off of Balance; therefore of Beats that shall be proposed in a minute being 50; & it being demanded to give of length of a Pendulum; The analogy is, As of square of 50 viz 2500 is to of square of 60 viz 3600, so is 39,2 to 56,4 of length Required. and

24 Table of Equation of Time for Regulating of Clock & Watches

Page	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.
1	9-4	14-48	10-04	0-45	4-10	1-02	4-45	4-28	3-53	13-16	15-21	5-35
2	9-26	14-46	9-47	0-20	4-11	0-50	4-53	4-18	4-14	13-32	15-13	5-06
3	9-48	14-44	9-30	0-12	4-12	0-37	5-00	4-08	4-34	13-46	15-03	4-38
4	10-10	14-41	9-13	0-03	4-13	0-23	5-07	3-57	4-55	13-59	14-53	4-09
5	10-31	14-37	8-55	0-18	4-12	0-13	5-13	3-46	5-15	14-11	14-41	3-40
6	10-50	14-32	8-37	0-33	4-11	0-00	5-18	3-37	5-36	14-23	14-29	3-10
7	11-9	14-27	8-19	0-48	4-10	0-13	5-24	3-21	5-56	14-34	14-17	2-40
8	11-27	14-21	8-01	1-02	4-08	0-26	5-29	3-08	6-17	14-44	14-03	2-10
9	11-45	14-15	7-43	1-16	4-06	0-39	5-33	2-55	6-38	14-54	13-49	1-40
10	12-02	14-07	7-25	1-28	4-03	0-52	5-36	2-46	6-58	15-04	13-34	1-11
11	12-18	13-59	7-00	1-41	4-00	1-04	5-39	2-17	7-19	15-13	13-17	0-41
12	12-34	13-50	6-47	1-54	3-56	1-17	5-42	2-13	7-39	15-22	13-00	0-11
13	12-47	13-41	6-28	2-06	3-41	1-30	5-44	1-58	7-59	15-28	12-43	0-19
14	13-02	13-31	6-00	2-16	3-46	1-43	5-45	1-42	8-19	15-34	12-24	0-40
15	13-15	13-21	5-51	2-27	3-40	1-56	5-46	1-26	8-38	15-40	12-05	1-19
16	13-27	13-10	5-32	2-38	3-34	2-08	5-46	1-09	8-58	15-45	11-45	1-49
17	13-38	12-59	5-14	2-48	3-28	2-20	5-45	0-52	9-18	15-50	11-25	2-18
18	13-48	12-47	4-55	2-55	3-21	2-32	5-44	0-35	9-37	15-53	11-04	2-47
19	13-58	12-35	4-36	3-06	3-13	2-44	5-42	0-17	9-57	15-56	10-42	3-16
20	14-07	12-22	4-17	3-14	3-05	2-56	5-40	0-01	10-16	15-58	10-26	3-45
21	14-15	12-08	3-58	3-22	2-56	3-07	5-38	0-18	10-34	15-59	9-56	4-14
22	14-22	11-54	3-40	3-30	2-48	3-19	5-34	0-36	10-52	16-01	9-32	4-42
23	14-48	11-49	3-22	3-37	2-39	3-30	5-30	0-55	11-19	16-00	9-08	5-09
24	14-34	11-24	3-03	3-43	2-29	3-41	5-26	1-14	11-28	15-59	8-43	5-36
25	14-38	11-09	2-45	3-39	2-19	3-51	5-20	1-34	11-45	15-57	8-17	6-04
26	14-42	10-54	2-26	3-53	2-09	4-01	5-14	1-53	12-02	15-55	7-51	6-30
27	14-45	10-38	2-09	3-57	1-59	4-11	5-08	2-12	12-18	15-51	7-23	6-57
28	14-47	10-21	1-51	4-01	1-48	4-20	5-02	2-32	12-33	15-47	6-59	7-23
29	14-48		1-34	4-04	1-37	4-29	4-54	2-52	12-49	15-41	6-31	7-48
30	14-49		1-17	4-07	1-25	4-37	4-46	3-13	13-04	15-35	6-03	8-12
31	14-49		1-01		1-14		4-37	3-33		15-27		8-35

In of Mechanical part. Of Walking or Flying Automata.
Of this kind were Vulcans Tripodes, Celebrated by Homer, that
w^{ere} made to move up & down of Houfe, & fight with one another.

Cardan makes mention of an Image holding in its hand a Golden
apple, beautified with many costly Jewels, & if a Man offered
to take it Statue presently shot him to death; if touching of it
apple serving to discharge several Bowes, or other like Instru-
ments couched in of Body of of Image.

Regiomontanus made a wooden Eagle & an Iron Fly.

Magnificent works. St. Pauls Steeple at London (w^{ith} of Spire
was on it & was fired by Lightning Anno 1555) the Stonework
was 260 foot high & of Spire as much & was 520 foot in all.

The Steeple at Cremonia in Italy, is 528 foot high.

The Ball upon St. Peters in Rome, is 466 feet.

The Height of of Pyramids 1350 Feet.

The Length of of Pyramids 883 feet.

Boston Steeple in Lincolnshire all of Stone & without any
Spire, is 264 feet.

The Column or Monument, Erected in memory of of Great fire
in London Anno 1666, 202 foot from of Ground to of top of of
Flame, Its Circumference 47 $\frac{1}{2}$ feet hollow with Steps up
to of top.

In of Historical Part. In of Time of of Grecian Wars
after a great overflowing of of Rivers, Pollux Reports, That
of was found upon of Sands of Carcase of a man, whose length
was 33 Cubits & in our Measure is 47 $\frac{1}{2}$ feet; a Prodigious Car-
case: For (according to of foregoing Proportions) his Head should be
5 foot long.

Pliny Reports, That after an Earthquake, a Mountain being
cleaven thereby, in it was found a Body standing upright
& was 46 Cubits high; Some Report it to be of Body of Orion, but
whose Body forever it was, it must be monstrous, for it can be thought
of a Head to be 7 foot, & his Nose two foot & half long.

Walter Dersley an Englishman being a Cofford Chieftain, he was put
Apprentice to a Smith, & grew so tall that a hole was made for him in of ground
to stand in up to of knees, to make him adequate to his fellow workmen; He was
paper

Porter after an order to King James I. First. He would make nothing to take, two of the tallest Yeomen of the Guard (like of Girard & Cher) under his arms at once, & order them as he pleased.

William Evans, born in Monmouthshire, & may justly be counted a Giant of our age, for he was full 7 foot ~~high~~ & a half in height. He was Porter to King Charles I. First. & succeeded William Parsons in his place & exceeded him in height two inches; but not so proportionable in all parts of his Body as Parsons was.

Of Dwarfs. Julia the niece of Augustus, had a little Dwarfish fellow called Cynops, whom she much esteemed, he was not above 2 foot & 3 quarters in height; and Termoda a freed Maid of Julia was of the same height.

Nicépholas in his Ecclesiastical History, saith, I saw one John de Esrix of Mechlen inⁿ he was brought through Basel to the Duke of Parma then in Flanders Anno 1592. He was 35 years of age, he had a long beard, was perfect & straight in all his Limbs, & was but 3 foot high. he could not go up stairs, much less could he get upon a form, but was always lift up by a servant. He was skilled in 3 Tongues, Ingenious & Industrious, & with him (a while) I raised a Tablet.

There was a Dwarf at Wartenberg, at the Nuptials of the Duke of Bavaria. He was armed Cap-a-Pee, Girt with a short Sword & a short Spear in his Hand; He was put into a Pie, & was set upon a Table, at last, raising the Lid, he stepped out, drew his Sword, & after the manner of a Kencer, traversed about the Table.

Cardan Reports That he saw a man in Italy, at full age, not above a foot & half high, carried about in a Parrot's Cage.

There was a Frenchman, of the Country of Lamofin of about the same Height, with a formal Beard, who was shewn in a Cage for money, at the end whereof was a little Hatch into which he Retired; and when the assembly was full, he would come out & play upon an Instrument.

Of Dwarfish Monsters. Bucanon relates of a Monster who had only one Body below the Navel, but above two different ones; w^m any part below the Navel was hurt, both of Bodies participated of the Pain, if above that Body only that was hurt. These two upper Bodies would sometimes Quarrel, & one dying the other pined away by degrees. It lived 28 years, & could speak several Languages, & was taught to play on a Musical Instrument.

In the year 1538 there was Born one who grew up to the stature of a man; he was double to his Head & Shoulders, so that one face stood opposite to the other; both were of a likeness, Resembling each other both in Beard & Eyes; They had both the same appetite, & both hungered alike: the voice of both was almost the same & both loved the same Wife.

Not long since in Elsinghorn lived a Woman of good Quality, who by her Account drew near to Time of her delivery, & so provided all things necessary: But in her last Month, her big Belly seemed to be much swollen. Her time of Travail being come, & of usual Pains of Labour going before, she was delivered of a Creature very like unto a Dormouse of great Size, which (to the Amazement of Women then Present) with great celerity, fought out, & found a hole in the Chamber into which it crept & was never seen after.

In the Year of our Lord 1633, at Norway we Read of a marvelous Example of a Woman, who having often before been delivered of humane Births; & again big, & after strong Labour was delivered of 2 Eggs. The Woman's name is mentioned, & no difference to be discerned between them Eggs & Hens Eggs, one of them being broke, & the other kept. One Egg came Apr^l 17th & Apr^l 18 other next Day.

In the Year of our Lord 1576 upon the 27th Day of Dec^r, one Ann Thomperin abt. 30 years of age was delivered of a Boy & 2 Serpents. This Woman I faith Cassar Barbinus in his History of France told me upon her Faith, that in the Summer before in an Extream hot day, she had drunk of a Spring in a Grove called Prudettholke, adjoining to Brasil, where she suspected she had drunk off the sperm of Serpents; she grew so big & she was faine to carry her belly in a swathing-band. The Child was very lean & serpents with each of them an Ell long, & thick as I am or of an Infant, both as alive as they were, buried by the midwife in Church-yard of St. & Elizabeth.

The Concubine of Pope Nicholas 3^d was delivered of a monster which resembled a Bear. Martin 4th his Successor, entertaining of James Lady & fearing that she should bring forth another Bear which helps, he caused all the Painted & Carved Bears about his Palace to be expunged or removed: For this Pope was not ignorant how the shapes & Pictures in one conceived in a Woman's Imagination at the time of Conception, do remain imprinted in the Body of that which is conceived.

At Tortoghenbosch, a City in Brabant, upon a solemn Festival, some of the Citizens disguised themselves in several Habits, some like Angels, some like Devils, to augment of Sport. One of these (who acted a Devil, part) Ran home to his House in his Devils shape, took his Wife threw her upon a Bed saying, he would get a young Devil upon her: he was not deceived; for of that Copulation, there was born a Child, such as the wicked spirit is painted, which at his coming into the world began to Run & Skip up & down the Chamber.

Some are cut out of their Mothers wombs, as Scipio Africanus's first Julius Caesar, mantilinus, marcellus, Earl of Tife, & Dr. J. of England & others. One Cornelius Gorman, a German says, that himself had cut out of several Women, 6 living Children.

Out of *J* Historical Remarks of London & Westminster,
R. B. author.

Page 75, To Conclude this Bridge for admirable workmanship
Vastness of foundation & Dementions, & for stately houses, & Rich
shops built thereon, Surpasseth all others in Europe; it hath
19 arches Founded in deep River, made of Square Stone sixty
feet in height & 30 in breadth. distant 20 feet one from a-
nother, joined together with Vaults & Collars & built as some say
upon dry soft ground being 300 feet in length & 30 feet broad,
& a Drawbridge almost in the middle. This is London Bridge.

Page 71 *J* Thames Runs above 9 score miles before it comes to
J Sea. Page 69 The Sea flows gently up 30 miles, that is al-
most to Kingston 12 miles above London by Land & 20 by Water.

Page 149 there Suffered upon *J* Act of Religion 277 Persons
of all Qualities & ages, there perishing in *J* Flames 4 Bishops
21 Divines, 8 Gentlemen, 34 artificers, 100 husbandmen,
Servant & Labourers, 26 Wives, 20 Widows, 9 Virgins,
2 Boys, & 2 Infants one of whom springing out of his mo-
thers Womb whilst she was burning at *J* Stake was again
unmercifully thrown into *J* fire.
In *J* 39th of *J* Elizabeth 17390 persons died of *J* Plague in
one year in London. In *J* first year of K. Char. 1st 35417
persons died of *J* Plague in London in one year. Page 151,
In 1665, 68596 persons died of *J* Plague in London in
one year, in 1666 Sep. 2. *J* Great Fire in London, & in 4
Days burnt down 13200 Houses.

Memorandum. Nov. 5th 1729 Mr Bowman was
ordained Minister of Dorchester. Mr Dunforth died May 26th 1730

Upon *J* Tomb of Mr Pool in Dorchester it is thus Written;
The Epitaph of William Pool, is he himself made while
he was yet living, in Remembrance of his own Death, and
left it to be Engraven on his Tomb, that to being Dead he
might warn Posterity.

Or a Resemblance of a Dead man bespeaking *J* Reader.
Ho Passenger 'tis worth thy pains to stay
And take a Dead Mans Lesson by *J* way!

I was what now thou art, and thou shalt be
What I am now, what does twist me & thee!
Now go thy way: But stay take one word more,
Thy Staff for ought thou knowst stands next y^e Door:
Death is y^e Door, yea Door of heaven or hell;
Be Warn'd, be Arm'd, ~~Repent~~ Repent, Farewell.

^{William} Mr. Pool was a ^{learned} pious Gentleman often Schoolmaster in Doncaster.
He died Feb^r 24th 1674. Aged 81 years.

From Hamilton's New Account of the
East Indies. Vol. 1st Printed 1727.

Page 36. Between Sinai & Judda [on y^e S.E. side
of ~~Arabia Felix~~ y^e Red Sea, in Arabia-Felix] is
the place where y^e famous Balm of Gilead grows.
It is reported to proceed from a Shrub, y^e bark of
which is split, & Vessels set under y^e wound to
receive it, as it drips from y^e wound.

Page 37. Betlesackee. [a little to y^e southward
of Judda above mentioned] is about 25 English miles
from y^e Sea, & is y^e greatest Market for Coffee in the
World. It supplies India, Persia, Turkey in Asia, A-
frica, & Europe, besides England, France & Holland,
with Coffee Beans. The Europe Shipping takes yearly
at Mocha (from whence Betlesackee is about 100
English Miles) about 2000 Tuns, rather more than
less, & y^e other Nations above 20000 Tuns more. The
whole Province of Betlesackee is planted with
Coffee Trees, & are never suffered to grow above 4 or

Four or five yards high; and of Bean or
Berry grows on of Branches & Twigs, first green,
then red, at last a dark brown colour. The
Berries cling to of Branches like so many in-
sects, & when they are ripe they shake off.

Page 40. Speaking of Mocha above said: Those
who are obliged to drink of of Wells near of Town
(for they fetch their good water 20 miles) are in
danger of having a long small Worm breed in their
Legs or Feet, that inflames the Place where it
breeds, which is accompanied with extreme Pains.
In 5 or 6 Days it appears between of Intestine and
outward Skin, & then puts its head through, & so
when of Patient observes, he takes hold of it with
a pair of Tweezers, and pulls it very gently
out, about an inch or two at a time, in 24 Hours,
& rolls it round an Hen Quill, or some other thing
of that thickness. It is no thicker than a Treble
string of a Violin; and of have seen of them,
after they have been pulled out, about 2 Foot &
an half long. While it is in of Leg, it is daily
covered with a Plaster, & if it chance to Break
in of Operation, the Patient will be troubled with
intolerable Pains for a long while: & some-
times they are crippled by it.

Page 84. He says Arrack [which I suppose in of France we
call Rack] is distilled from Dates. And page 200. He
says that Arrack is distilled from Toddy of of Cocoa-nut
Tree, & grows in great abundance about Goa, and of
English are their best customers, for they buy great
Quantities yearly for Punch. And page 374, At of
of

of Sea to Cydon or Zeolan is made of best Arrack in the
World.

Page 89. about of River Euphrates is overgrown with
Reeds & Shrubs, & in the Month of August are very dry
by the Extream Heats of June & July, and the River then
in these parts, them in such Agitation, that by friction
they take fire, so that before we see land, we see
great smokes by Day, & great Fires by Night of 4 or 5
Leagues long.

Page 148. The Post in the Moguls Country goes very
Swift, for at every Caravan Seray (or I suppose Stage)
which are built on the High-roads about 10 miles
Distance from one another, Men, very swift of
Foot are kept ready. The Letters are inclosed in
a gilded Box, which he that carries holds over
his Head when he comes near of Seray, & giving no-
tice of his arrival, another takes it & runs to the
next, & so on, Night & Day, at 5 or 6 miles an
Hour, till it is carried where directed to; so
that in Eight Days, Advice are brought from the
furthest part of that large Empire to Court.

The City of Shurab [in the Moguls Dominions where the
English live for Trade] may be reckoned 200000 Souls.

The Austerities of the Jougies [or one sort of their Priests]
are beyond belief to those who have not seen Exem-
ples of them. Some stand on one Foot some year,
with their Arms tied to some Beam of an House, or
branch of a Tree over their Heads, & continue in
that posture, except when Nature calls for Exone-
ration, for others feed them while they stand.
Their Arms in time settle in that Posture, that
never

ever after they become useless, & are not to be brought again into their natural Position. Some sit in a stupor with their Faces looking upwards; till they are incapable of altering & Posture of their Necks, their Gullet swelling almost as thick as their Heads; and they also take no Sustainance with their own Hands. Others Clench their Fists, & tye them in that Posture, till their Finger-Nails come through the Back of their Hands. And their Fastings are as incredible. I saw a Woman of about 30 Years of Age, who made a Vow of Fasting three Months, to avert some impending Calamity threatened by Heaven, that she pretended to foresee. The Governour of Surrat being a zealous Mahometan (who generally discourage Gentilism & strive to detect their Superstitions & Miracles) ordered if this woman to be put into a Prison without Window without any other Sustainance than fair Water, and to be well guarded by Mahometans, to avoid Imposture.

About 80 Days after she was imprisoned, & several other Europeans paid her a visit, & got by Door open to observe her Aspect. We found her in Health, but very weak, & her Pulse beat very low. Her Keepers declared, that she had taken no sustenance but a very small quantity of Water all of while they had of overfeeding of her, nor did she ever desire any Food. She told us, that three or four Years before, she had fasted Sixty Days on the same Account.

Page 209. Speaking of Bombay (an Island belonging to the English) and of small Islands thereabout, say there is a 3 or 4 League off an Island belonging to the Portuguese called Elephant, that is a pretty high Mountain, with a large Cave about half way to the top, hewn out of a solid Rock, & Pillars curiously carved, with figures of men

Men & other things. There are several dark Rooms in
out of Rock. I fired a Fusee into one of the Rooms, but
I never heard Cannon nor Thunder make such a dreadful
noise, which continued about half a minute, & the moun-
tain seemed to shake. As soon as the noise was over,
a large Serpent appeared, which made us take to our
heels, & got out of the Cave at one Door, & he,
in great haste, went out at the other. I judged him
about 15 Foot long, & two Foot about.

Page 260, Speaking of the Country about Gou, I have
seen a Wild Bull killed there, whose four Quarters
weighed above a Tun weight, besides the Hide, Head &
Guts. I measured his Horns, & were not long in pro-
portion to their thickness, being 23 inches in
circumference, about 9 Foot long, & his marrow-
Bones so large, that I took the marrow out with an
ordinary silver Spoon. The flesh is not so fatty
as small frame Cattle.

Page 342. Speaking of the Island of Ceylon or Zeban;
Elephants of this Island breed are the most docile
of any in the world, though not large, few exceeding
3 yards in height. They catch them with a strait
rope, & soon tame them when caught.

The way they catch them, as they told me, is, they drive
large stakes into the ground, for 2 or 3 hundred Paces
in a plain, & about 100 Paces distant, they begin
another row of stakes, that almost meets one of
the ends of the first Row, only leaving 7 or 8 foot be-
tween them open, for a Door; and between out of
from the Door place, are four stakes driven thicker
than in the Rows, like a square Chamber.

In the Door place is a wooden Portulane or Trapdoor,
filled to pull up or let down at pleasure. When all is
ready

ready they bring a Female Elephant trained up
for a Decey, & she is put into a Chamber, and a
Trap-door kept open. There are Men kept placed
in a little clove place built over top of a Stakes at a
Trap-door, & if the Female Elephant makes a loud Roar-
full Noise. If a male Elephant is near, he presently ap-
proaches the Chamber, on a outside; But finding no entrance
there, he walks along a inside till he finds a door, then walk-
ing back on a inside of a Stakes, he finds a door & enters.
As soon as he is in, a watchmen let fall a Trap-door, &
go & bring two male Elephants to accompany him that is de-
royed to their stables. When they come near a Trap-door,
it is pulled up, & they enter, & place their feet on each
side. If he moves further, they bang him heartily with
their Trunks, & a female before him blows on him too.
When he is tired with their treatment, & finds no o-
ther remedy but Patience, he even grows tame, & walks
very orderly between his two Guards, whenever they move
to conduct him, & continues very sociable ever after;
when Butting Time comes, and then, if he be young,
he becomes very rude & troublesome. That time is
known by a great Sweating in his head, so they have
strong Fetters ready to put on his legs, and fasten to a
great Tree for 8 or 10 Days till his Madness continues.

Page 344. The Religion of Zelan (or Ylon) is Paga-
nism, & for want of a better Image or Relick to a-
dore, they worship a Monkey's Tooth. When the
Portuguese were settled there, the Priests lost
their Adorable Tooth, & a fly Fellow, who had
accompanied a Portuguese Ambassador there from
Columbo, pretended he had found it 3 years after it
was missing. He had it seems seen it, & got one
as like it as possible. The Priests were so over-
joyed that it was found again, that they purchased it
of a Fellow for a row a hunk, reported to be above £10000 ster.

Book 2. page 9. Speaking of Fort William in the Country of Bengall, built by the English, says, it was built of Brick & Mortar, called Puckah, which is a Composition of Brick-dust, Lime, Molasses & cut Hemp; & when it comes to be Dry, is as hard & tougher than firm stone or Brick.

Page 108. Speaking of Atcheen one of the Islands of Sumatra, says, Elephants are very plentiful at Atcheen, and consequently their Teeth, which the Surral Merchants buy off for their Markets. In 1702, I saw one that had been kept there about 100 years, but by Report was then 300 years old; he was about 11 feet high, and had a vast deal of Sagacity. When any young male Elephant grows unruly, which they usually do in rutting-time, & break their fetters & go astray, this old Elephant is immediately sent after him, & following the Track of his Foot, will find him out, & bring him back to his stable, either by fair or foul means. I have taken a piece of Gold Coin & a piece of Lead Coin, (that passeth for Money) and thrown them into a puddle of water, & if the Elephant would find out the Gold among the Lead, by the nice feeling of his Proboscis.

There is a very conical piece of Revenge he took once Tailor in Anno 1692. A Ship called the Dorothy, commanded by Capt. Thwaits, called at Atcheen for Refreshments in her way from England to Bengal, and two English Gentlemen residing then at Atcheen, went aboard to furnish themselves with what European Necessaries they had occasion for; and amongst other things they bought some Florin or Stuffs for Cloths, & there being no English Tailor to be had, they employed a Surral Tailor, who kept a Shop on the Bazaar, great Market-place, & generally half a dozen, or half a Score Workmen to sew in his Shop. It was the Elephant's Custom to reach in his Trunk at Doors or Windows as he passed along the side of a street, begging decay-

decay'd Fruits or Roots, is of Inhabitants generally
made him.

As he was one Morning going to a River to be
washed, with his Carnack, or Rider on his Back,
he chanced to put his Trunk in at a Tailors Win-
dow, & a Tailor smelt him ~~in his Nose~~ with his
Needle, instead of giving an Alms. The Ele-
phant seem'd to take no Notice of it at first, but
went calmly ~~went~~ on to the River, & wash'd
& being done with washing, troubled the Water
with one of his fore Feet, and then sucked up
a good quantity of that dirty Water into his
Trunk, & passing unconcernedly along the same
side of the Street where the Tailors Shop was, he
put in his Trunk at the Window, & blew his Nose
on the Tailor with such a force & Quantity of Water,
that the poor Tailor & his Life-guard, were blown
off the Table they were sitting on, almost frighted out
of their senses; but the English Gentlemen had
their Cloths spoiled by the Elephants comical, but
innocent Revenge.

Page 200. In Cambodia, Their way of killing
Elephants is very singular, for they form a piece
of Iron like a slug, & the foremost end is made sharp.
In the Woods grow certain Trees with a thick Bark of
a violent Poisonous Quality. They drive the sharp
end of the Slug into the Bark, & let it stay a short
time in it, then put the Slug into their Gun Char-
ged with Powder, & coming near the Beast fire the
Slug into its Body. The Elephant being thus wound-
ed, does not die immediately, but the Man keeps sight of it
for a small space of Time, & then it drops down dead.
And

And with of same poisoned Slugs they kill Cattle & Buffaloes, for their Tongues. This Subtile Poisen has also another strange Quality, that if Men become Hungrey or Thirsty, (as y^e often do in y^e Woods) they squeeze a few drops of it on a Leaf of a Tree, & they licking of Leaf, it gives immediate Refreshment; But if of Skin be Broken, & of Juice touch of part, it proves mortal without Remedy.

Page 289. There are many usefull Trees in China that bear no Fruit. Some bear Beans, but of those I have seen in India at Surrat & Bengal. One sort they have that provokes sleep, by laying some of y^e leaves in y^e Bed near the Patient. The grow wood Tree is commodious for making Anchors for Shipping. It is prodigiously strong & hard, & has natural Gravity enough to sink it to y^e bottom of y^e Sea. On y^e Mountains of Zensi, neer y^e famous Wall that Divides China from Tartary, grows abundance of that usefull & Valuable Root Rhubarb, whose use is so well known in Europe. The Root Genseng grows also in Woods there; & when y^e Natives go in quest of it, to find it, they are forced to go in y^e night season, with Torches in their Hands, for fear of being assailed by y^e wild Inhabitants of y^e Woods, such as Lyons, Tigers, Leopards, Rhinoceroses &c. of y^e Brutal kind, besides dangerous Reptiles, as Serpents & Snakes, which all flee from Fire. I have heard of Serpents thirty feet long, & five in Circumference which lurk all Day in their dens, & come out in y^e night to prey on animals that lie securely in theirs. This Root Genseng, is Excellent in Consumption &c. is sold at a great Price, some at three times its weight in silver; but after it is a year old, it goes off at 1/2 per pound, because it is difficult to keep y^e worm out of it.

The Emperors Revenue, by Report amounts to 180000000 of Tayels.

Book 1st

In Dr Derham's Astro-Theology, Chap 2 of ϕ Magnitude of ϕ Earth, & He says page 10.th That ϕ Diam.^r of ϕ Earth is 7967,7 English Miles, its Surface 199444201 Miles, & its Solid Content 2648-56000000 Miles. And page 11, ϕ Diam.^r of Mars is reckoned to be but 487,5 English Miles, & ϕ Moons Diam. but 2175 Miles, & Mercury 2748 Miles.

Saturn page 12 is Computed at 93451 Miles Diam.^r & 427,318,300,000,000 Miles in its Bulk: and Jupiter at 120653 Miles in Diam.^r, & 920011200000000 Miles in Bulk. And ϕ Sun page 13.th its apparent Diam. being Computed at 822148 Eng. Miles, & its Solid Content at 296971,000,000,000,000 Miles, Supposing ϕ face we see of ϕ Sun to be its true & Real Globe.

In ϕ next Chap. of ϕ Immensity of ϕ Heavens, he saith ϕ is a great Difference between former, & latter observations of ϕ Sun's Horizontal Parallax (which is Equal to ϕ Earths Semidiameter viewed at ϕ Sun) & so of ϕ Sun's Distance: but he fixes upon Mr Cassini's Number, viz. That ϕ Par.^r is $9\frac{1}{2}$ Seconds & ϕ Dist. 21600 Semidiameters, or 86051398 Eng. Miles, & double of ϕ Number & Length of its Diam. viz. 172102795 Eng. Miles. And that ϕ Sirius is ϕ nearest first Star & yet by ϕ best observ.^s is found to be in appearance 27664 times less than ϕ Sun, & Consequently so many times further off, which will amount to above 2 millions of millions of English Miles. And Chap. 3.^d of Sun Revolves Round its axis in about 25 $\frac{1}{2}$ days, found by its spots.

The Same Authar says Book 4th That if Periodical motion of Mercury is near 88 Days; Venus in somewhat above 224 Days; The Earth with its Companion the Moon in $365\frac{1}{4}$ Days: then Mars in about 687 Days: Next him Jupiter in about 4333 Days: and lastly Saturn in somewhat above 10759 Days.

And in of Same Book he says if Sun is nearest to us in of winter as is manifest from of Increment of its Apparent Diameter, it being $32' 47''$ & in of Summer it decreases to $31' 40''$. And if of Sun in of winter Solstie moves about a fifteenth part swifter: From whence it comes to pass if from of Vernal to of autumnal Equinox, there are about 8 Days more $\frac{1}{2}$ from of Autumnal to of Vernal.

In Book 5 of Snowdon hill in England tis of highest in all of Island, & is but 1247 yards high. The highest part of of Alps 2, 1/2 miles. The Pike of Teneriffe one of of highest Riges throughout of Globe, & is but between 3 & 4 miles Perpendicularly above of Sea. The highest hills in of Moon as he Quoter authars are but about $\frac{3}{4}$ of a German Mile. And some of them to Reach 170, 190, & 100 Miles in length.

Book 6th of Earth whirles about at of Rate of 1043 miles an hour. And of Gravitating Power Exceeds of Centrifugal as 2174 Exceeds 7,54064 is is above 288 Times, therefore all of parts by quiet & secure in of Respective places, & Enjoy all of benefits of accompany this motion without any disturbance from it. The Suns Orbit is 2582873 Miles & whirles about in $25\frac{1}{4}$ Days, & so doth Revolve at of Rate 4262 Miles an hour, is above 11 times as fast as of Earth. Jupiter Revolves at of Rate 39159 Miles an hour at its Equator. The Gravity of all Bodyes decrease in proportion of of Square of of Distances Reciprocally; That is at twice of Distance of Thore is but $\frac{1}{4}$ so much as at a single distance, at thrice a Ninth.

Mr. Greenwood says, The Sun performs an Intire Revolution, i.e. 360 Deg^s in 365 Days 5 Hours, 48 min. & 57 Seconds of Time.

1 A Receipt for Pain in the Stomach & Bad Digestion
occasioned by Wind &c. I had it of Maj^r Vassal, he of Dr
Montgomery a Dr. of Medicine in England.

1 Ounce of Rubarb, 2 Drains of Gentium, 2 Drains of
Orange Peel, Steeped in 3 Pints of Medara Wine about
4 Days; Shake it every Day & yn Strain it off. Take a Dose
wⁿ you sit down to Dinner after 4 first Monthfull & no
other time. Note Dr. Danforth thinks Sena may answer for
of Rubarb, that being very Dear. *Cardialgia*

Another for of *Cardialgia* or Pain in the Stomach &c.

Species of Hira Simple 2 ounces, Sena 1 ounce, 3 quarts
of Wine. 2 ounces of Anniseed or Fennel Seed or Car-
raway seed. Steep them 4 or 5 Days a little warm, take abt.
2 Spoonfulls in the Morning & 2 Spoonfulls in the Afternoon.
as I had of Dr. Danforth, & is called Vinum Sacrum or Hira
ira. This I have found good by some of French Doctors.

(The Question ~~now~~ to be proposed for our Discus-
sion is this,) Whether it is lawful to deliver up
an Innocent Person for the safety of a Republick
When a Republick is besieged by an inveterate
Enemy, it is certainly the Duty of the Inhabitants
to make all the Resistance possible, before they
themselves deliver themselves up to their will.
But, if after they are conquered, they receive Intelli-
gence from the Enemy, that (by delivering up
a certain Person whom they themselves know
to be innocent) the Remains ~~shall~~ be left

in peaceable possession of their Habitations:
though it seems a little hard, Would it not ~~be~~
~~truly~~ be the best ^{Way} ~~Method~~ to deliver him
up to their will, ^{rather} than that, ~~that~~ ^{the} all, and
the same Person ^{also} should be doomed to
remediless Destruction? surely it would.
therefore as the safety of the Republick
depends upon ^{one} of the Citizens, surely it is
the best Way to deliver him up, ^{rather}
than that all should be captivated.
though this may be called an Evil, yet
the Deliverance of the whole ^{is a greater}, therefore
of two Evils, we ought always to take
the least.

Disputatio forensis, non scripta bene
auctore, ut Lector facile discernat.

From Archibald Patoun's Book of Navigation.

The number of Solid Inches contained in a Gallon, Bushel &c. as determined by Act of Parliament, are as follows,

A Gallon of Ale or Beer	} contains	282	} Solid inches.
of Wine		231	
of Corn		268,8	
A Bushel of Malt		2150,4	
of Coals		2246	
A Scots Pint		1502	

The Variation of Compass was first observed at London, in the year 1580, to be 11-15' Easterly, and in 1622 it was 6-0 E, and in 1634, it was 11-5 E; still increasing, & it keeps approaching to the meridian, till it coincided with it, and then there was no variation at all: after which variation began to be westerly; and in the year 1672 it was 2-3 W, and in the year 1683, it was 11-30 W, and since that time of variation continues at 10 to 12 to increase westerly; but how far it will go that way, Time & Observations will probably be the only means to discover.

At Paris in 1690 the Variation was 3-00 E. and in 1666, there was no Variation; but in 1681, it was 2-30 W. and still continues to go westerly.

In short, from Observations made in different parts of the World, it appears, that in different Places the Variation differs both as to its Quantity & Denomination; it being East in one Place, & West in another; the true Cause & Manner of which, for want of a sufficient Number of Observations, has not as yet been fully explained.

From Mariners Compass Rectified.	Lat.	Long. W.
Newfoundland I. Johns Harbour	47-28	51-29
Bay of Brest	52-10	54-57
Zeebeek	47-04	68-15
Anti-Costi Island & Middle	47-35	60-45
Cape Brittain	46-10	58-30
Cape Sable	43-43	64-25
Port Royal	44-35	64-07
Pascatoway Entrance	43-20	68-40
Boston Entrance	42-28	67-47

To find y^e Superficial Content of a Globe.
Rule, Multiply y^e Diameter by y^e Circumference & y^e Product is y^e Superf. Cont.

To find y^e Solid Cont. of a Globe.
Rule. Multiply y^e Superficial Content by one 6th part of y^e Diam. & y^e Product is Solid Cont.

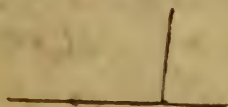
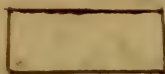
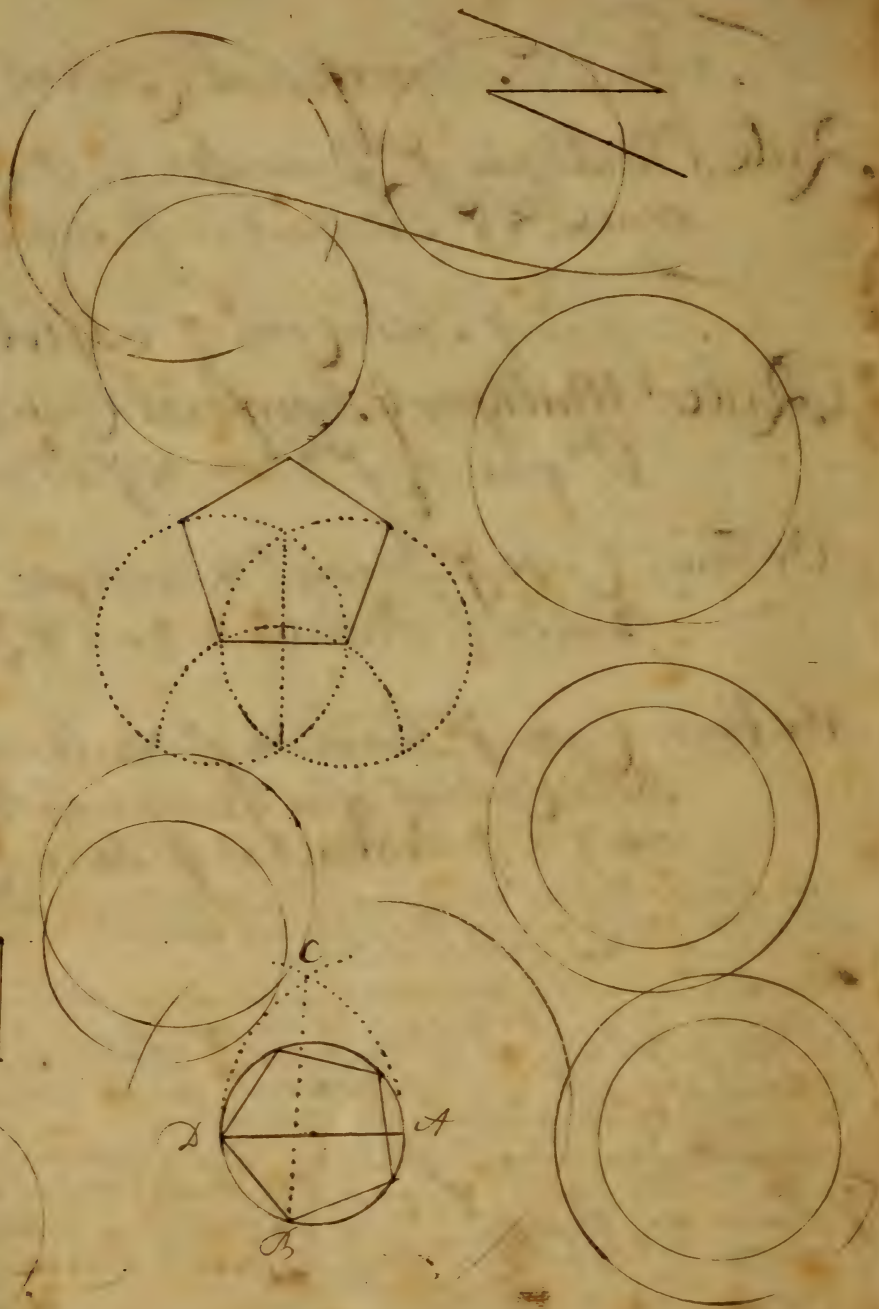
Or Thus. Cube of Diam.^r & multiply y^t by 11 & Divide y^t Product by 21 & y^e Quot. is Solid Cont.

Or Thus. Cube of Diam. & y^e Mult. by 5238 (y^e Solid Content of a Globe whose Diam. is one) & y^e Product is y^e Solid Content.

The Superficial Content of a Cylinder is found by mul. y^e Circum. of one of y^e Bases into y^e Length, and to y^e Product adding y^e areas of y^e two Bases.

The Solidity of a Pyramid, is found by mult. y^e Area of y^e Base into $\frac{1}{3}$ of y^e Height. The Super Content is found by mult. y^e Circum. of y^e Base in half y^e Line joyning the Vertex & any Point in y^e Circumference, & that Product added to y^e Area of y^e Base.

The Superficial Content of y^e Frustum of a Cone is found by adding to y^e Super. Cont. of y^e whole Cone, twice y^e area of y^e Base of y^e small Cone, and from y^e sum taking y^e Super. Cont. of y^e small Cone.



The Proportions to find \angle Suns Altitude for any
Hour of \angle Day, are as follows,

As \angle C. S. of \angle Hour from \angle Merid. or Noon,

is to Rad.

So is \angle Tan. of \angle Lat.

to \angle Tan. of a fourth Ark.

Then Consider \angle Dec. of \angle Sun, & \angle Hour proposed: If \angle Lat. &
Dec. be alike, both N. or both S., and \angle Hour proposed be be-
tween Noon & Six: take \angle Dec. out of \angle 4th Ark, & Rem-
ainder shall be \angle 5th Ark. But if \angle Hour fall between
6 & midnight, or \angle Lat. & Dec. be unlike (one N. & other
S.) Add \angle Dec. to \angle 4th Ark, & \angle Sum shall be \angle 5th Ark,
if \angle Sum exceed 90 Deg. take it from 180 Deg., the Re-
mainder is \angle 5th Ark. The 5th Ark being found say,

As \angle S. of \angle 4th Ark

To \angle S. of \angle Lat.

So is \angle C. S. of \angle 5th Ark,

To \angle S. of \angle Altitude.

Or Thus, As Rad. to \angle C. Tan. of \angle Lat.

So is \angle C. S. of \angle Angle from \angle Meridian

To \angle Tang. of a fourth Ark.

From \angle Cont. of \angle Sun's Dec. Subtract \angle 4th Ark,
the Remainder is \angle 5th Ark.

As C. S. of \angle 4th Ark to Ar.

is to \angle S. of \angle Lat.

So is \angle C. S. of \angle 5th Ark

To \angle S. of \angle Altitude

Note, \angle C. S. of \angle 4th Ark is C. Ar., but none of
the rest, and when these 3 Log. are added together
& \angle Rad. subtracted from \angle sum, the Remainder is
 \angle Log. of \angle S. of \angle Altitude Required.

A Table of the Sun's Altitude for every Hour in the Day, at every 6 deg. of Declination, for Latitude 42-25 N.

Declina.	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hour
	5. 7	6. 6	7. 5	8. 4	9. 3	10. 2	11. 1	12
	deg. Alt.	Alt.	alt.	alt.	alt.	alt.	alt.	alt.
South Declin.								
Trop. vs	0. 0	0. 0	0. 0	4. 0	12. 06	18. 30	22. 23	24. 5
18. deg. Dec.	0. 0	0. 0	0. 0	8. 12	16. 44	23. 33	27. 32	29. 35
12. deg. Decl.	0. 0	0. 0	2. 40	12. 46	21. 44	29. 2	33. 33	35. 35
6. deg. Declin.	0. 0	0. 0	6. 52	17. 16	26. 39	34. 26	39. 23	41. 35
Equator	0. 0	0. 0	11. 02	21. 40	31. 28	39. 49	45. 30	47. 35
North Declin.								
6. deg. Decl.	0. 0	3. 50	⁵ 13. 05	25. 58	36. 08	44. 27	50. 15	53. 35
12. deg. Decl.	0. 0	8. 26	19. 6	30. 6	40. 36	49. 59	56. 16	59. 35
18. deg. Decl.	1. 32	12. 0	22. 58	34. 02	44. 49	54. 44	62. 29	65. 35
Trop. 69.	5. 06	15. 20	26. ₂ 12	37. 35	48. 23	58. 48	68. 45 7. 21	71. 05

The Proportions to find φ Suns Altitude for any Azimuth
if φ Sun be in φ Equator are

As the Line of $90-00$

to φ Co Line of φ Azimuth from φ Meridian

So φ Co Tan. of φ Latitude

to φ Tan. of φ Altitude at φ Equator.

If φ Sun have Declination, φ proportions are,

As φ Line of φ Latitude

to φ Line of φ Declination

So φ Co Line of φ Altitude at φ Equator

to φ Line of a fourth Ark.

When φ Latt. & Decl.ⁿ are both alike in all Azimuths
from φ Prime vertical unto φ Meridian, add φ fourth
Ark unto φ Ark of φ altitude at φ Equator.

When φ Latt. & Decl.ⁿ are both alike, & φ Azimuth more
 φ 90 distant from φ Meridian, take φ altitude at φ Equa-
tor out of this fourth Ark.

When φ Latt. & Decl.ⁿ are unlike, take φ fourth Ark out
of φ Ark of altitude at φ Equator, so shall φ remainder be
 φ altitude of φ Sun for that Azimuth.

The Distance between φ Equator & φ Tropick may be
a little more φ 7.3 of φ Distance between φ Tropick & φ Center.

	10		20		30		40		50		60		70		80		90		100		110	
	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.	D.	m.
Trop. C.	71-05	70-50	70-08	68-52	66-34	64-03	59-55	54-08	46-16	36-14	24-44	13-06										
20 Dec. N.	67-35	67-18	66-30	65-03	62-50	59-37	55-05	48-52	40-38	30-28	19-06	7-50										
Dec. N.	63-35	63-16	62-21	60-53	58-13	54-38	49-41	43-01	34-26	24-07	12-54	1-59										
12 Dec. Nor.	59-35	59-14	58-12	56-23	53-35	49-43	44-22	37-18	28-23	17-57	6-51	0-0										
8 Dec. Nor.	55-37	55-12	54-04	52-04	49-04	44-50	39-06	31-39	22-27	11-54	0-55	0-0										
4 Dec. Nor.	51-35	51-10	49-56	47-46	44-30	39-59	33-53	26-04	16-36	5-56	0-0	0-0										
Equator	47-35	47-08	45-48	43-28	39-58	35-07	28-41	20-31	10-46	0-0	0-0	0-0										
4 Dec. S.	43-35	43-06	41-40	39-10	35-26	31-05	23-29	14-58	4-56	0-0	0-0	0-0										
8 Dec. S.	39-35	39-04	37-32	34-52	30-52	25-24	18-16	09-23	0-0	0-0	0-0	0-0										
12 Dec. Sou.	35-35	35-02	33-24	30-33	26-19	21-31	13-00	3-44	0-0	0-0	0-0	0-0										
16 Dec. S.	31-35	31-00	29-15	26-03	21-43	15-36	7-41	0-0	0-0	0-0	0-0	0-0										
20 Dec. S.	27-35	26-58	25-06	21-53	17-06	10-37	2-17	0-0	0-0	0-0	0-0	0-0										
Trop. V.S.	24-05	23-26	21-28	18-04	13-02	6-11	0-0	0-0	0-0	0-0	0-0	0-0										
	24-05	23-26	21-28																			

A Table of Sun's Altitude to every 4 degrees
of Declination for every tenth Azimuth
Latitude 42-25 N.

This belongs to
uppermost line.
if not being
place it.

10. 20. 30. 40. 50. 60. 70. 80. 90. 100.

A Table for y^e Dividing of y^e Horizon-line
in Gunter's Quadrant, to every 5th degree to 30.

For Drawing of y^e Horizon y^e proportion is,
As Co Tan. of y^e Latt.
to Tan. of greatest Declin.ⁿ
So is y^e Ln. of 90-00 ²³⁻²⁵ (y^e Tropic)
to y^e Ln. of y^e Intersection; w^{ch} y^e Horizon shall cross

For y^e Dividing of y^e Horizon

As Radius, or Ln. 90-00
is to y^e Ln. of y^e Latitude
So is y^e Tan. of y^e Horizon
to y^e Tan. of y^e Ark, in y^e Quadrant y^t shall Draw

{ Tropic 32

5	10	15	20	25	30
d. m.	d. m.	d. m.	d. m.	d. m.	d. m.
3-22	6-47	10-14	13-47	17-27	21-17

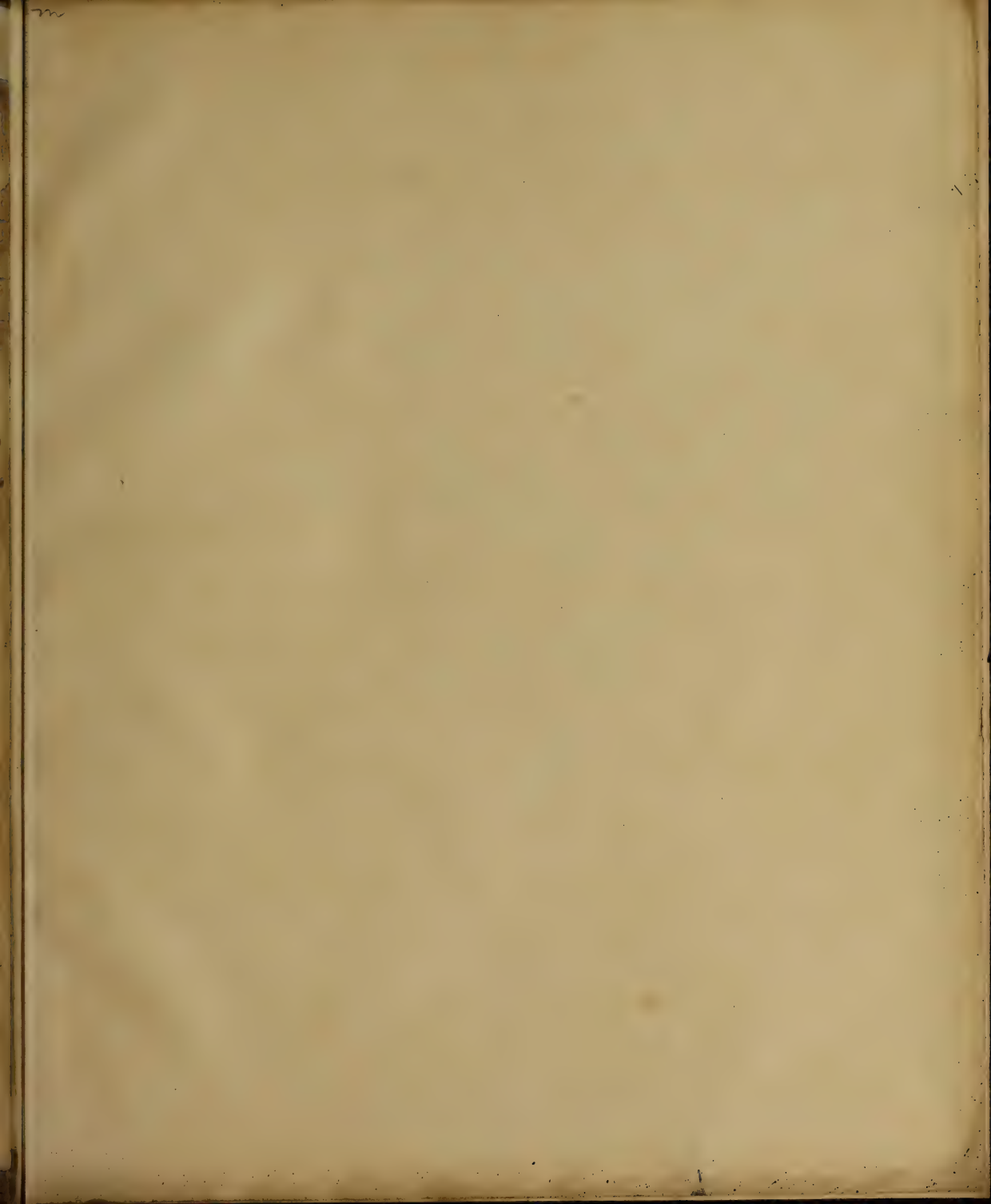
A Table of y^e Sun's Declination w^{ch} he Sets upon Several
Azimuths. The Proportions are

As y^e Ln. of 90-00
to y^e Co Ln. Latitude
So y^e Co Line of y^e Azimuth from y^e Meridian
to y^e Line of y^e Declination

60	70	80
21-39	14-37	7-22

*A Table of y^e Suns Meridian Altitude
for every 5th Day of y^e Year, for Latth 42-25 N^o*

Months	0	5	10	15	20	25
	D. m.	D. m.	D. m.	D. m.	D. m.	D. m.
Jan ^r	25-54	26-36	27-39	28-50	30-10	31-37
Feb ^r	33-51	35-13	36-59	38-49	40-43	42-38
March	44-13	45-47	47-35	49-43	51-40	53-36
April	56-12	57-38	59-23	61-02	62-36	63-46
May	65-41	66-39	67-45	68-42	69-28	70-08
June	70-45	70-58	71-05	71-00	70-46	70-21
July	69-39	69-03	68-10	67-08	65-58	64-41
August	62-41	61-27	59-40	58-08	56-21	54-31
Sept ^r	51-53	50-20	48-23	46-26	44-29	42-33
October	40-15	38-45	36-55	35-11	33-30	31-55
Novem ^r	29-53	28-50	27-39	26-37	25-45	25-03
Decem ^r	24-28	24-13	24-05	24-10	24-26	24-54
Jan. 30	Mar. 30	April. 30	May. 30	June. 30	July. 30	Aug. 30
33-12	55-28	65-25	70-37	69-47	63-17	52-39
	Sep. 30	Oct. 30	Nov. 30	Dec. 30		
	48-38	30-27	24-33	25-33		



P.P.L. Bindery,
JUL 21 1902

